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Idaho Operations Office

Phase C Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B

INEEL
IDAHO NATIONAL ENGINEERING & ENVIRONMENTAL LABORATORY

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Phase C Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B

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Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
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Phase C Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B

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ABSTRACT

This remedial action work plan (RAWP) identifies the approach and requirements for the implementation of the Phase C remedial action. The RAWP details the management approach for the construction and operation of the remedy. As identified in the remedial design/remedial action scope of work, a single RAWP will be prepared for Phase C. This RAWP will be revised as necessary as new components are added to the Phase C remedial action. Also, a separate remedial design will be prepared for each component of the Phase C remedial action.

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ACRONYMS

ANP	Aircraft Nuclear Propulsion
ARAR	applicable or relevant and appropriate requirements
BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	contaminants of concern
CWSU	CERCLA waste storage unit
D&D	decontamination and decommissioning
DEQ	Idaho Division of Environmental Quality
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DPTU	dissolve phase treatment units
EA	emergency action
EPA	U.S. Environmental Protection Agency
ESD	explanation of significant differences
FDR	field demonstration report
FFA/CO	Federal Facility Agreement and Consent Order
GWTF	Groundwater Treatment Facility
HASP	health and safety plan
IDAPA	Idaho Administrative Procedures Act
IDHW	Idaho Department of Health and Welfare

INEEL	Idaho National Engineering and Environmental Laboratory
ISB	in situ bioremediation
ISCO	in situ chemical oxidation
ISMS	Integrated Safety Management System
M&O	management and operating
MCL	maximum contaminant level
MSA	management self-assessments
NA	natural attenuation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act
NGWTF	New Groundwater Treatment Facility
NIH	normal industrial hazard
NLCID	no-longer contained-in determination
NPTF	New Pump and Treat Facility
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
OU	operable unit
PCB	polychlorinated biphenyl
RAO	remedial action objective
RAWP	remedial action work plan
RCRA	Resource Conservation and Recovery Act
RD/RA	remedial design/remedial action

RI/FS	remedial investigation/feasibility study
ROD	Record of Decision
SO	system operational
SOW	scope of work
TAN	Test Area North
TCE	trichloroethene
TEWP	technology evaluation work plan
TSCA	Toxic Substance and Control Act
TSF	Technical Support Facility
VOC	volatile organic compound
VPP	Voluntary Protection program
WAG	waste area group
WCE	well characterization and evaluation
WMP	waste management plan

Phase C Remedial Action Work Plan for Test Area North Final Groundwater Remediation, Operable Unit 1-07B

1. INTRODUCTION

This Phase C remedial action work plan (RAWP) is prepared in accordance with the Idaho National Engineering and Environmental Laboratory (INEEL) Federal Facility Agreement and Consent Order (FFA/CO) (DOE-ID 1991) by the U.S. Department of Energy Idaho Operations Office (DOE-ID). This plan addresses the implementation of Phase C of the Operable Unit (OU) 1-07B remedial action at Test Area North (TAN) Technical Support Facility (TSF) injection well, TSF-05, and surrounding groundwater contamination, TSF-23. This Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC§9601 et seq.) remedial action will proceed in accordance with the signed OU 1-07B Record of Decision (ROD) (DOE-ID 1995). This ROD has been revised by the Explanation of Significant Differences (ESD) (INEEL 1997a). Based on the ROD and the ESD, the scope of the OU 1-07B remedial action has been described in the remedial design/remedial action (RD/RA) scope of work (SOW) (DOE-ID 1997b). This RAWP covers the implementation of Phase C of the OU 1-07B remedial action. Implementation of Phase B is covered in the Phase B RAWP and the technology evaluation work plan (TEWP) (DOE-ID 1997c).

The OU 1-07B ROD states that the selected remedy will be conducted in three phases. These phases are: (1) Phase A—Transition of OU 1-07A Interim Action to OU 1-07B Final Remedial Action, (2) Phase B—Hot Spot Containment and/or Removal with Treatability Studies, and (3) Phase C Dissolved Phase Groundwater Treatment with Continuation of Hot Spot Containment and/or Removal. The ESD states that the Phase A transition period has been completed and signifies the end of the OU 1-07A interim action.

1.1 Remedial Action Summary

Phase A has been completed and served as a transition from 1-07A to 1-07B activities. Phase B is focused on hot spot hydraulic containment and source removal via surge and stress. Phase B also includes treatability studies to evaluate innovative technologies against the selected pump and treat remedy. Evaluation of emerging technologies and routine groundwater monitoring are conducted concurrent with Phase B activities.

Phase C is the continuation of hot spot containment and/or removal and implementation of dissolved phase treatment. Phase C, which implements the long-term final remedy, is expected to be completed in no more than 100 years from the ROD signature date, and will end when the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) review process demonstrates that remedial action objectives (RAOs) have been met. Active remediation under Phase C is assumed to be conducted from 2000 through 2025 (25 year duration); therefore, the Phase C facility design life will be 25 years with replacement as necessary thereafter, based on 5-year reviews, during the 100-year restoration timeframe. Groundwater monitoring and maintenance of institutional controls will continue during Phase C.

As described in the RD/RA SOW (DOE-ID 1997b) current planning for Phase C assumes implementation of the default pump and treat remedy to include separate pump and treat systems in each of the three treatment zones:

1. Hot Spot—New Groundwater Treatment Facility (NGWTF)

2. Medial Zone—New Pump and Treat Facility (NPTF)

3. Distal Zone—Dissolved Phase Treatment Units (DPTUs).

The current planning for Phase C includes designing and constructing the medial zone NPTF as early implementation of Phase C. This planning also assumes that design and construction of the NGWTF and the DPTUs will not begin until after completion of the Phase B treatability studies. Figure 1-1 identifies the proposed locations of the default remedy facilities. For the hot spot and the distal zone, this allows the agencies to consider selecting an alternate technology to augment or replace the default pump and treat remedy, based on the treatability study results.

1.2 Remedial Action Approach

This RAWP identifies the approach and requirements for the implementation of the Phase C remedial action. The RAWP details the management approach for the construction and operation of the remedy. As identified in the RD/RA SOW, a single RAWP will be prepared for Phase C. As noted in the previous section, Phase C will be implemented in up to three separate remedy components. This RAWP will be revised as necessary as new components are added to the Phase C remedial action. Also, a separate remedial design will be prepared for each component of the Phase C remedial action.

The remedial design establishes the general size, scope, and character of the project. It details and addresses the technical requirements of the remedial action. The remedial design for each Phase C component will begin with a preliminary design (30% design), which details significant aspects of the design approach. From the 30% design a 90% design will be developed, which is a detailed set of engineering plans and specifications. Resolutions to agency comments to the 30% design will be included in the 90% design.

The remedial design and RAWP are built upon the planning elements established in the RD/RA SOW, ROD, and ESD and carry those elements through the design and implementation of the remedy. This RAWP defines work elements for the components of the remedy that are critical to implementation of the ROD. Supporting the remedial design and RAWP are associated documents including a Phase C operations and maintenance (O&M) plan (DOE-ID 1999a), groundwater monitoring plan (INEEL 1999a), waste management plan (WMP), interim decontamination plan, and health and safety plan (HASP). The organization of these documents is described below.

1.2.1 Document Hierarchy

A single Phase C RAWP will be prepared that will describe and govern the OU 1-07B remedial action in total. This RAWP will initially detail the NPTF component and will be revised for future remedial action components as they are determined. These components may include the DPTUs, NGWTF, or augmenting or replacement technologies such as in situ bioremediation (ISB), in situ chemical oxidation (ISCO), or natural attenuation (NA). The remedial design for each component will be referenced to the RAWP, and a new remedial design will be prepared for each new remedial action component.

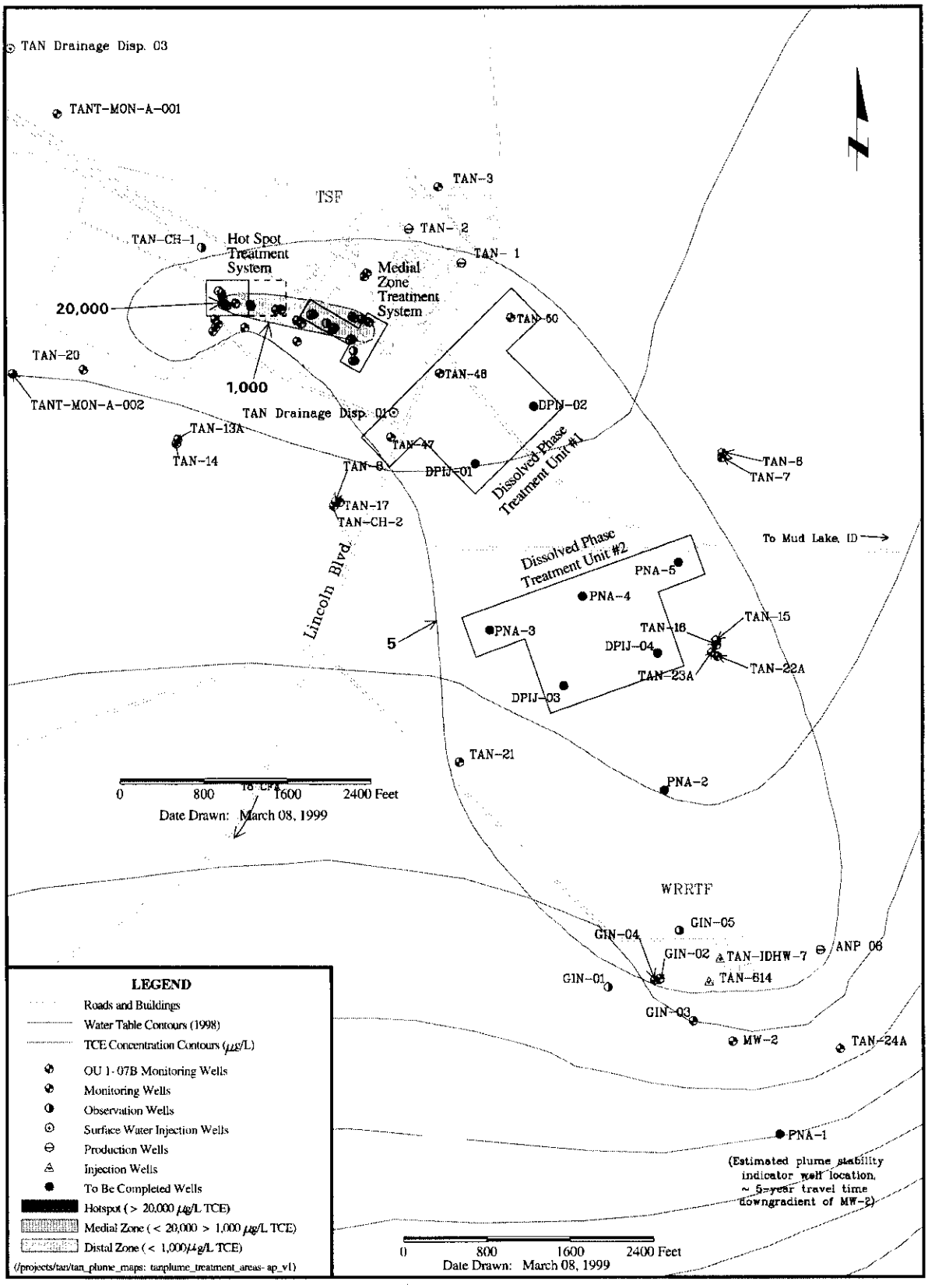

Figure 1-1. Hot spot and dissolved phase plume and Phase C facility location map.

The OU 1-07B document hierarchy is depicted in Figure 1-2. The Phase B RAWP, Phase C RAWP, and the TEWP (DOE-ID 1997c) are shown as the primary implementing plans under the RD/RA SOW. The TEWP, finalized in March 1997, details the overall implementation strategy for Phase B treatability studies and the Phase B RAWP identifies the implementation strategy for all other Phase B activities. This RAWP identifies the implementation strategy for all Phase C remediation activities.

These documents reference common documents that support remedial action activities such as the WMP, HASP, and others.

The Phase C O&M plan covers the O&M of the Phase C treatment systems. The O&M plan includes the O&M requirements, compliance monitoring and inspections, remedy performance monitoring, 5-year reviews, and O&M report. The Phase C groundwater monitoring plan covers groundwater monitoring requirements to support remedial action performance evaluation.

As outlined in the RD/RA SOW and the TEWP, at the end of the ISB, ISCO, and NA treatability studies, field demonstration reports (FDRs) will be prepared to document the outcome of the treatability studies and provide a basis for the agencies to decide whether one of the alternate technologies is more effective than the default pump and treat remedy. Following the agency decisions in the FDRs, further revisions to this RAWP will be prepared as necessary to complete the implementation of the Phase C default remedy. In the case where an alternate technology is chosen as a result of either the Phase I FDR or the Phase II FDR, a ROD amendment will be prepared and approved, followed by further revision to the RAWP to incorporate and implement the chosen alternate technology.

1.3 Phase C Implementation

As described above, Phase C implements the default pump and treat remedy or one or more alternate technologies to achieve restoration of the greater than 25 μg/L trichloroethene (TCE) plume within the 100-year restoration time frame. Phase C will include implementation of capture and treatment of the dissolved phase plume, and continuation of hydraulic containment and/or removal of the hot spot and groundwater monitoring activities that were initiated during Phase B. Phase C activities, with the exception of work in the medial zone, are set to begin after the completion of Phase B treatability studies, approximately 5 years after signature of the ROD, and are planned to continue through the year 2025.

The ESD identified hot spot areas and dissolved phase plume area definitions as shown in Figure 1-1. The area definitions include:

- Hot Spot (greater than 20,000 μg/L TCE)
- Medial Zone (dissolved phase 1,000 to 20,000 μg/L TCE)
- Distal Zone (dissolved phase 25 to 1,000 μg/L TCE).

Implementation of remedial action for the medial zone will be initiated through the design, construction, and operation of the NPTF. As described in the ESD, the construction and operation of the NPTF will be considered early implementation of Phase C. Final remedy implementation for the hot spot will follow the completion of the Phase B ISB and ISCO treatability studies at the hot spot. Until treatability studies are complete and the agencies make a final decision on the remedy for the hot spot, containment of the hot spot will continue using the existing Groundwater Treatment Facility (GWTF) or

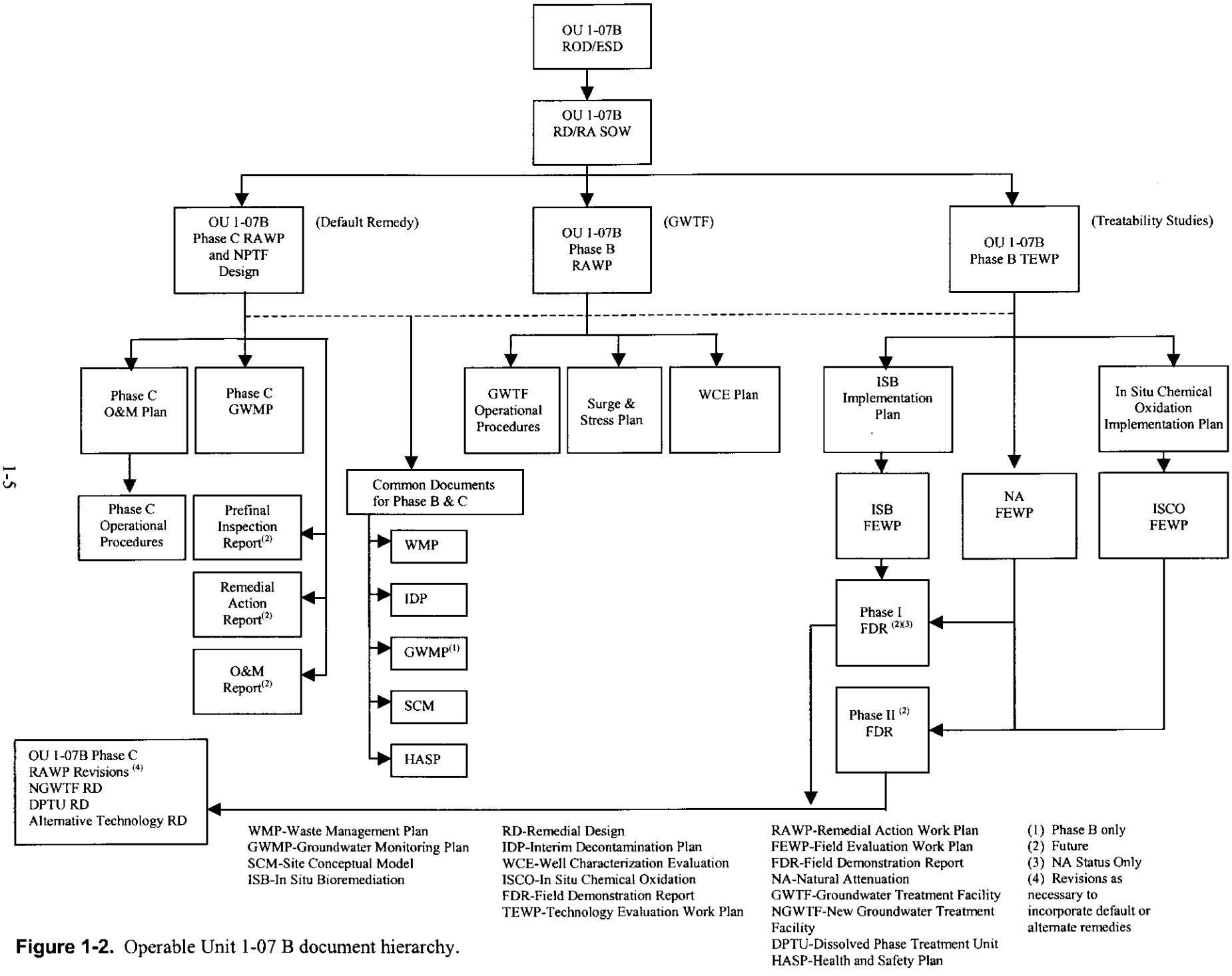

Figure 1-2. Operable Unit 1-07 B document hierarchy.

alternate treatment system in conjunction with the ISB and ISCO treatability studies. Final remedy implementation for the distal zone will follow the completion of the Phase B NA treatability study for the distal zone as reported in the Phase II FDR.

1.3.1 Planned Phase C Activities

The planned Phase C activities are identified below; the activities under Item 1 are addressed in this Phase C RAWP and the activities under Items 2 through 6 are addressed under the O&M plan as long-term O&M activities:

1. New facility construction—NPTF, NGWTF, DPTU, and/or an alternate technology facility:
    a. Design
    b. Construction
    c. Startup, system operational testing, and agency prefinal inspection
    d. Initial operations and shakedown
    e. Final inspection and remedial action report
2. New facility O&M:
    a. Operations and maintenance
    b. Compliance inspection
    c. Waste management
3. Remedy performance monitoring:
    a. Compliance monitoring
    b. Long-term performance monitoring (remedial action objective performance evaluation—support site conceptual model update)
    c. Groundwater monitoring (plume dynamic monitoring)
4. Five-year reviews and O&M report:
    a. Five-year reviews
    b. O&M Report
5. Institutional controls
6. Decontamination and dismantlement.

1.4 Medial Zone–New Pump and Treat Facility

Phase C medial zone remediation will include the design, construction, and operation of a new treatment system with extraction wells located approximately 610 m (2,000 ft) downgradient from the TSF-05 injection well. The purpose of the NPTF will be to capture and treat groundwater between the hot spot containment zone and the NPTF extraction wells, approximately 610 m (2,000 ft) downgradient. The new facility will operate at between 379 and 946 L/min (100 and 250 gpm). Based on data collected at the extraction location, influent radionuclide concentrations are anticipated to be below maximum contaminant levels (MCLs) and thus the system will not require radionuclide removal treatment.

1.4.1 New Pump and Treat Facility System Description

The NPTF consists of the equipment and piping needed to pump water from Wells TAN-33, -38, -39 and -40; two, 473 L/min (125 gpm), parallel air stripper treatment trains within a new building (with concrete floor and sump) located near TAN-38; and associated piping needed to discharge the effluent water into an injection well. The system will pump water from a combination of the wells at a nominal flow rate of 568 L/min (150 gpm). This water will be treated using the air stripper system to below MCLs for volatile organic compounds (VOCs). The air stripper system will treat extracted water VOCs to below MCLs. The extracted groundwater will be considered F001 listed waste and all components of the extraction system will meet secondary containment requirements required by the Resource Conservation and Recovery Act (RCRA). After the air stripping process, the water will (through request and approval of the Idaho Division of Environmental Quality [DEQ]) be considered to no longer contain the listed hazardous waste and will be discharged to the injection well without having to comply with the secondary containment requirements of 40 Code of Federal Regulations (CFR) 264 Subpart J.

1.4.2 NPTF Process System Requirements

The following is a summary of the general design parameters that were established in the NPTF functional and operational requirements:

- The system will pump and treat water at a normal operating flow rate of 568 L/min (150 gpm), with the capability for processing up to 946 L/min (250 gpm).
- The system will be capable of extracting water separately or in combination from any of the Wells TAN-33, -38, -39, and -40. The water will be reinjected into a new cross gradient well. Well TAN-36 will not be included in the extraction system because of the relatively low TCE concentrations present at its location. During the well characterization and evaluation (WCE) effort, the highest concentration of TCE measured in 16 samples from long-term and straddle-packer pumping tests was less than 500 μg/L. As noted in the WCE report (INEEL 1998a), "extraction from this well would result in inefficient TCE removal relative to extraction from the other four wells, which have much higher concentrations."
- The system will operate 24 hours/day, 7 days/week, while maintaining a facility uptime of ≥90%.
- The system will allow for unmanned operation. For design purposes, the maximum length of time needed for unmanned operations is 4 days.
- The system will have a 25-year operating life.

- The air stripper must remove the VOCs in the extracted water to below the set MCL. Based on the sampling results obtained during the well characterization and evaluation activities, the design influent concentrations for VOCs are as shown in Table 1-1. In order to meet MCLs, the air stripper must obtain a minimum removal efficiency of 99.6%.

- The system will not provide treatment for radionuclide removal.

1.5 Future New Groundwater Treatment Facility

Should alternative technology evaluations fail at the hot spot, a NGWTF will be designed and constructed at the hot spot. The purpose of the facility will be to treat groundwater to below MCLs for VOCs and to provide hydraulic containment of the source material located within the hot spot. Based on the OU 1-07B ESD, a radionuclide discharge standard will not be applied to this pump and treat system. This system is expected to have an operational life of 25 years, and thereafter, the facility will be replaced based upon 5-year reviews, as necessary to meet the ROD RAOs within the remedial time frame of 100 years. This hot spot containment system plus the medial zone NPTF and the distal zone DPTUs will support the long-term OU 1-07B remediation goals.

1.6 Future Dissolved Phase Treatment Units

Should NA prove to be inadequate for restoration of the distal zone within the 100-year restoration time frame RAO, then DPTUs will be designed and constructed to meet long-term remediation goals for the distal zone. These units are expected to be small air strippers that will treat water with TCE concentrations up to 1,000 ppb, and have an operational life of 25 years and thereafter the facility will be replaced based upon 5-year reviews, as necessary to meet the ROD RAOs within the remedial time frame of 100 years.

1.7 Groundwater Monitoring

Groundwater monitoring for Phase C will be performed in accordance with a groundwater monitoring plan developed for Phase C. The plan will consider and support the RAOs identified in the ROD. Monitoring data will be used to track the greater than 5 µg/L TCE plume, document contaminants of concern (COC) concentration changes over time, provide information on the attenuation rate of the plume, and to evaluate attainment of RAOs. The scope and requirements for groundwater monitoring are addressed in the Phase C O&M plan (DOE-ID 1999a) and the Phase C groundwater monitoring plan (INEEL 1999a).

Table 1-1. Influent concentration.

Contaminant	Concentration (µg/L)	MCL (µg/L)
TCE	1,100	5
PCE	70	5
Cis-DCE	120	70
Trans-DCE	50	100

TCE = trichloroethene
PCE = tetrachloroethene
DCE = dichloroethene.

1.8 Institutional Controls

Institutional controls will consist of engineering and administrative controls to protect current and future users from health risks associated with groundwater contamination by preventing ingestion of groundwater having contaminant concentrations of contaminants of concern (COCs) exceeding MCLs or 1.0E-04 to 1.0E-06 risk-based concentrations for contaminants without MCLs. The scope and requirements for institutional controls are addressed in Section 6 of the Phase C O&M Plan (DOE-ID 1999a).

Section 6 of the O&M plan provides additional detail of planned institutional control activities. The institutional controls for each component of the RA will be developed and submitted as part of the O&M plan prepared for the prefinal inspection of each component. Additionally, the O&M plan for the NPTF component of the RA will also present an outline of future institutional controls for each component. The final version of institutional controls for the overall OU 1-07B RA will be made with submission of the final version of the O&M plan, which will be for either the Dissolved Phase Treatment Units or Natural Attenuation.

2. REMEDIAL ACTION OBJECTIVES AND AGENCY REVIEW OF REMEDY EFFECTIVENESS

As part of the remedial investigation/feasibility study (RI/FS) process, RAOs were developed in accordance with the NCP and U.S. Environmental Protection Agency (EPA) guidance for conducting RI/FS investigations. The purpose of the objectives is to reduce the contamination in the groundwater at TAN to ensure that off-Site populations are not at risk in the future and that the future residents would not be at risk from use of TAN groundwater if the TAN area were converted to the public domain at any time in the future. The RAOs for Phase C as specified in the 1-07B ROD include:

- Prevent, to the maximum extent practicable, migration of contaminated groundwater beyond the hot spot at levels above MCLs, or for those contaminants for which an MCL does not exist, the contaminant concentration will be such that the total excess cancer risk posed by release of contaminated groundwater will be within the acceptable range of 1.0E-04 to 1.0E-06. For above ground treatment processes using reinjection of treated effluent, treatment shall, at a minimum, be sufficient to reduce the VOC concentration to below MCLs. Volatile organic compounds discharged to the atmosphere from hot spot treatment operations will not exceed the calculated emission rate limits specified in Table 9-1 of the ROD.

- Capture and treat a sufficient portion of the dissolved phase plume beyond the hot spot to provide for aquifer cleanup within 100 years of the date of ROD signature. For above ground treatment processes using reinjection of treated effluent, treatment shall be designed to reduce the VOC concentration to below MCLs. If an MCL does not exist, the contaminant concentration will be such that the total excess cancer risk posed by the groundwater will be within the acceptable range of 1.0E-04 to 1.0E-06. Volatile organic compounds discharged to the atmosphere from GWTF operations will not exceed the calculated emission rate limits specified in Table 9-1 of the ROD.

- Institutional controls shall be implemented to protect current and future users from health risks associated with ingestion of groundwater containing COC concentrations greater than MCLs or 1.0E-04 to 1.0E-06 risk-based concentrations for contaminants without MCLs. Institutional controls shall be maintained until COC concentrations fall below MCLs or 1.0E-04 to 1.0E-06 risk-based concentrations for contaminants without MCLs.

Table 2-1 identifies the components of Phase C that will be implemented to meet RAOs.

2.1 Remedy Performance Monitoring

Performance monitoring will be implemented to ensure that the selected remedy will meet all RAOs as identified above. Performance monitoring will consider the following three separate monitoring activities:

1. Treatment facility compliance monitoring

2. Long-term treatment facility performance monitoring

3. Overall plume restoration performance assessment through groundwater monitoring.

Table 2-1. Remedy implementation to meet RAOs.

Remedial Action Objective	Default Remedy	Alternate Remedy[a]
Phase C		
Hot Spot (greater than 20,000 µg/l TCE)	New Groundwater Treatment Facility	In Situ Bioremediation In Situ Chemical Oxidation
Medial Zone (dissolved phase 1,000 to 20,000 µg/l TCE)	New Pump and Treat Facility	
Distal Zone (dissolved phase 25 to 1,000 µg/l TCE)	Dissolved Phase Treatment Unit	Natural Attenuation
Distal Zone (dissolved phase 5 to 25 ug/L TCE)	Natural Attenuation	
Institutional Controls	Written notification to Master Plan Written notification to Bureau of Land Management (BLM) Engineering Controls	Written notification Master Plan Written notification to BLM Engineering Controls

a. See TEWP Table 1-3, applicability of alternative technologies for remediation of different zones within the TCE-contaminated plume.

Performance monitoring will result in collection of data that will support agency 5-year reviews of remedy performance. The requirements and objectives of performance monitoring are addressed in the Phase C O&M plan (DOE-ID 1999a).

2.2 Remedy Performance Review and Closure

The 1-07B ROD (DOE-ID 1997a) requires that the agencies evaluate the effectiveness of the remedy through the standard CERCLA 5-year review process. Based on the evaluations performed during the 5-year reviews the agencies will decide to continue, modify, or discontinue the remedial action. The timing and approach for conducting 5-year reviews is addressed in the Phase C O&M plan (DOE-ID 1995).

The planning and costing assumptions used in the ROD and the RD/RA SOW assume an active remedial action time period of 30 years. Active remedial actions refers to remediation activities that involve other than natural processes (natural attenuation) and require O&M of a remedial action treatment system. The 5-year review process will ultimately provide for the completion of O&M activities with respect to the active remediation time period. As addressed in the RD/RA SOW (DOE-ID 1997b), at the completion of O&M activities, an O&M report will be prepared to support an agency decision that the active remedial action has been successful in supporting the remedial action objectives. The O&M report will also provide for the handoff to the Waste Area Group (WAG) 10 long-term monitoring plan and the subsequent INEEL-wide 5-year reviews to ensure that NA will reduce contaminant concentrations to below MCLs within the 100-year remedial action timeframe established in the ROD. The approach and requirements for the O&M report are addressed in the Phase C O&M plan.

3. REGULATORY COMPLIANCE

The OU 1-07B ROD identifies the selected remedy as meeting the statutory requirements of Section 121 of CERCLA, as amended by the Superfund Amendments and Reauthorization Act, and to the extent practicable, the NCP. These statutory requirements are met through the remedy being protective of human health and the environment and through remedy compliance with applicable or relevant and appropriate requirements (ARARs). Compliance with ARARs is addressed in the following sections.

3.1 Compliance with ARARs

The selected remedy will comply with the ARARs specified in the OU 1-07B ROD. A detailed list of ARARs for the selected alternative is shown in Table 3-1.[a] This table also identifies the documents that provide for the implementation of each ARAR. The ARAR implementation strategy for each remedy component is identified in Appendix A. Within the RAWP and all other Phase C documents where references are made to the CFR for RCRA requirements, Table 3-1 provides the corresponding Idaho Administrative Procedures Act (IDAPA) regulation citation.

3.2 Environmental Compliance

Phase C remediation activities will comply with the substantive requirements of the National Environmental Policy Act (NEPA) through the development of an environmental checklist for each component of the Phase C remedy. The environmental checklist provides for the required review to identify and evaluate potential impacts and the identification of actions to ensure compliance with environmental regulations.

3.3 Human Health and Safety

Phase C remedial action activities will be performed in accordance with the requirements of the Occupational Safety and Health Administration (OSHA) Standards 29 CFR 1910.120 and 1926.26, "Hazardous Waste Operations and Emergency Response." These requirements are identified in and implemented through the *Test Area North, Operable Unit 1-07B Final Groundwater Removal Action Health and Safety Plan* (INEEL 1999b). Section 8, Emergency Response, and Section 10, Safety and Health, provide further information concerning the implementation of OSHA requirements.

3.4 DOE Orders

There are numerous U.S. Department of Energy (DOE) directives in the form of orders, manuals, notices, and standards that must be complied with during the performance of work at the INEEL. These directives govern all aspects of work at the INEEL and are typically implemented through management control procedures, technical procedures, plans, and other site documents.

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a. Citation of the Idaho Waste Management Regulations incorporate by reference the federal hazardous waste regulations.

Table 3-1. Summary of ARARs for remedial action.

Requirements	Citation	ARAR Applicability By Location						
		RAWP	Remedial Design	O&M Plan	Waste Management Plan	GWM Plan	IDP	HASP
CAA and Idaho Air Regulations								
Idaho Air Pollutants noncarcinogens	IDAPA 16.01.01.585		X					
Idaho Air Pollutants carcinogens	IDAPA 16.01.01.586		X					
NESHAPs - <10 mrem/yr	40 CFR 61.92		X	X				
NESHAPs – monitoring	40 CFR 61.93		X	X				
ID Fugitive Dust	IDAPA 16.01.01.650 and .651		X	X				X
RCRA and HWMA								
Generator Standards	**IDAPA 16.01.05.006**							
Hazardous Waste Determination	40 CFR 262.11				X			
General Facility Standards	**IDAPA 16.01.05.008**							
General Waste Analysis	40 CFR 264.13				X			
Location Standards	40 CFR 264.18 (a) and (b)	X	X	X				
Preparedness and Prevention	40 CFR 264.31-.37		X	X	X			X
Closure Performance Standard	40 CFR 264.111	X	X	X				X
Disposal/Decontamination	40 CFR 264.114	X	X	X				X
Use/Management of Containers	40 CFR 264 Subpart I		X	X	X			
Tank Systems	40 CFR 264 Subpart J		X	X				
Miscellaneous Units	40 CFR 264 Subpart X	X						
Air Emission Standards for Process Vents	40 CFR 264 Subpart AA		X	X				
Land Disposal Restrictions	IDAPA 16.01.05.011							
RCRA	Section 3020		X					

Table 3-1. (Continued.)

Requirements	Citation	ARAR Applicability By Location						
		RAWP	Remedial Design	O&M Plan	Waste Management Plan	GWM Plan	IDP	HASP
UIC								
Idaho Rules for the Construction and Use of Injection Wells	IDAPA 37.03.03		X					
ID Public Drinking Water								
MCLs (numerical standards only)	IDAPA 16.01.08.050.02 and .05			X		X		
Secondary MCLs (numerical standards only)	IDAPA 16.01.08.400.03			X				
National Historic Preservation Act								
Assessing information needs	36 CFR 800.4(a)(1)(i),(iii)(a)(2)	X	X	X				
Locating Historic Properties	36 CFR 800.4(b)		X					
TBCs								
Radiation Protection of the Public and the Environment	DOE Order 5400.5		X					X
Fire Protection	DOE Order 5480.7A		X					
Radioactive Waste Management	DOE Order 5820.2A	X	X		X			

4. REMEDIAL ACTION

This section addresses the procurement and construction of the Phase C remedy components. This section also addresses the administrative requirements for system operational (SO) testing, prefinal inspection, initial operation, shakedown, and final inspection, which lead up to the remedy component being deemed operational and functional in the Phase C remedial action report. For SO testing, initial operations, and shakedown, the requirements of Section 5, "Operations and Maintenance," also apply.

4.1 Facility Procurement and Construction

This section identifies anticipated construction activities, project and construction management plans, procurement and subcontracting plans, quality assurance, and construction completion and inspection plans. Figure 4-1 is a logic diagram that describes the steps necessary from construction completion, to preparing a remedial action report and to determine that the remedy is operational and functional. This section also identifies the general method of implementation of these activities. Particular attention will be focused on unique or special techniques that may be required to accomplish these activities. The focus will be to mitigate potential human and environmental health and safety issues. The activities described are generic to any of the remedy component facilities.

4.1.1 Project Management and Construction Management

The DOE-ID project remediation manager will be responsible for notifying the EPA and Idaho Department of Health and Welfare (IDHW)/DEQ of project activities and will serve as the single interface point for all routine contact between the agencies, and the management and operating (M&O) Contractor.

The M&O Contractor is responsible for implementation of the remedial action. This includes design, field activities such as groundwater monitoring, and facility construction, waste management, health and safety, quality assurance, and landlord services and other necessary tasks for completion of the remedial action.

An organizational chart and position description is provided in the *Test Area North Final Groundwater Remedial Action Operable Unit 1-07B Health and Safety Plan* (INEEL 1999b).

4.1.2 Procurement and Subcontracting

The work involved in this remedial action is primarily out year operations; however, there are short-term initial construction activities to install the facilities and ancillary components for long-term operations. Short-term construction activities will be accomplished primarily through subcontracting the work. The plan will be to combine, to the largest extent practicable, the work into a single work package that will be competitively bid and awarded as a firm, fixed price contract to the lowest qualified bidder (Subcontractor). The request for proposal will specify, among other things, a strict period of performance, which will correspond with the overall project schedule.

4.1.3 Construction Activities

This section provides a task description of the facility construction activities, which includes subcontract work, and site worker accomplished work.

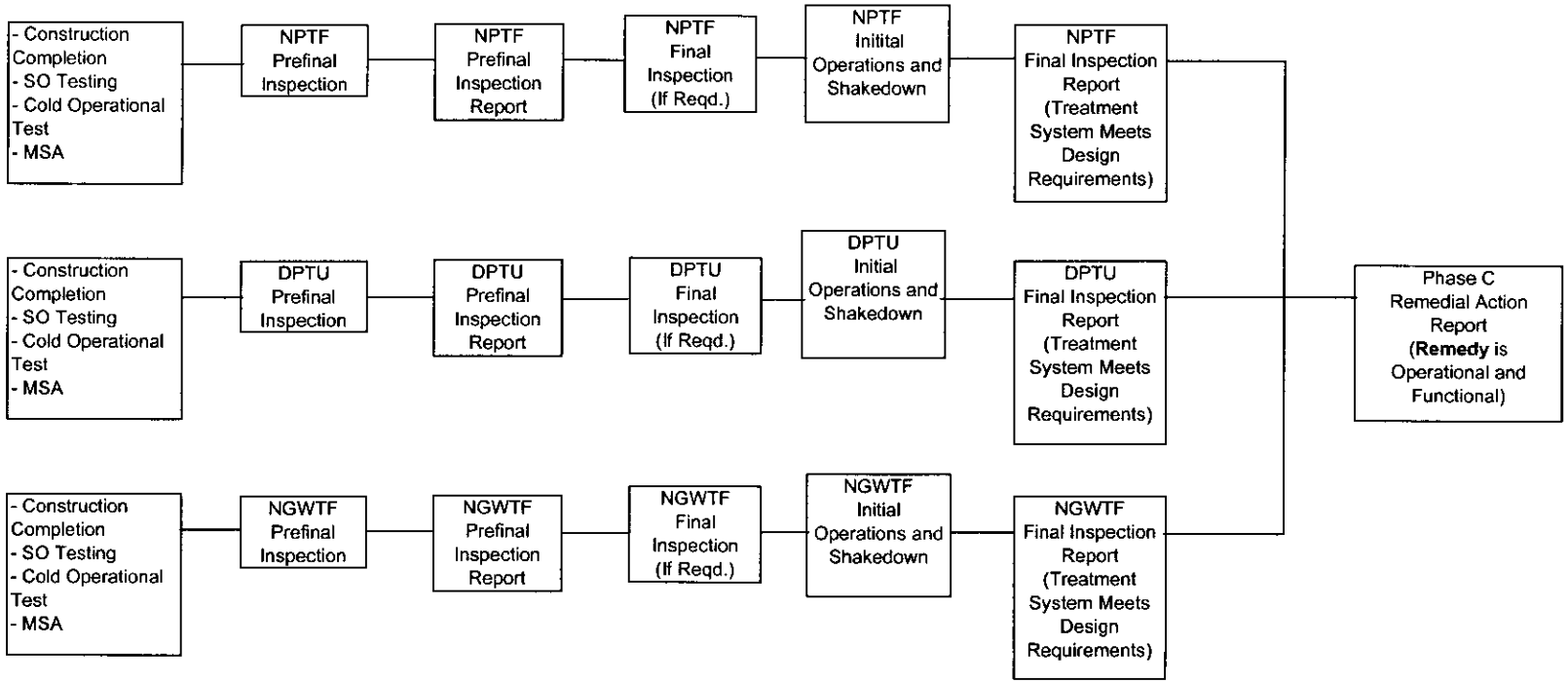

Figure 4-1. Agency remedial action acceptance logic diagram.

4.1.3.1 Premobilization. This period of time will be utilized to prepare the Subcontractor, site workers, and support personnel for the facility construction. This will include submittal and approval of vendor data for near-term construction activities and long lead items; submittal by the Subcontractor of work plans, bonds, insurance certifications, as well as providing other documentation certifying compliance with training, medical, and quality requirements.

This period will be used by the Contractor to perform a final assessment of their readiness to proceed with construction. This will primarily entail ensuring that the necessary permits have been acquired, personnel are available and trained, and that all the necessary site and regulatory notifications have been made.

4.1.3.2 Mobilization. This period of time will be used by the Contractor and Subcontractor to prepare for construction activities. This work is generally the institution of required administrative and engineering controls. These include:

- Health and safety controls
- Fences, signs, and postings
- Identification and demarcation of the contamination and decontamination zones, lay-down, and staging areas
- Delivery and storage of construction materials and equipment
- Set-up of the subcontractors site offices.

4.1.3.3 NPTF Construction. The construction of this facility is composed of three primary components: (1) extraction and reinjection components, (2) process system enclosure, and (3) process system. A description of the activities involved with the construction of these components follows below.

Extraction and Reinjection Components—The extraction and reinjection components consist of the influent and effluent piping and appurtenances, which extend from the extraction well heads to the process system and from the process system to the reinjection well. This work includes the following:

- Extraction Wells: four extraction wells have been constructed and will be used in support of this facility (TAN Wells -33, -38, -39, and –40). No additional extraction wells are planned for this facility. These wells are completed as open hole wells; no additional downhole work for well completion is planned.

  Each extraction well will be equipped with an extraction pump and associated piping to bring the water to the surface. This will require the use of a crane setup to hoist the equipment into the hole. There is the potential that this work will involve decontamination of equipment that may come in contact with F001-listed groundwater. The OU 1-07B decontamination plan and the WMP will be followed to handle any residue that might be produced as a result of this activity.

- Reinjection Well: a reinjection well will be installed cross gradient from the extraction wells location. This well will be located approximately 152 m (500 ft) south of Well TAN-40 and 152 m (500 ft) south west of Well TAN-38. This well will be completed with casing to the

water table approximately 64 m (210 ft) bls and as an open hole to the Q-R interbed. See the remedial design for more information on this well and its location.

The reinjection well will be equipped with an effluent line down hole. This will require the use of a crane setup to hoist this material into the hole. There is the potential that this work will involve decontamination of equipment, that may come in contact with F001-listed groundwater. The OU 1-07B decontamination plan and the WMP will be followed to handle any residue that might be produced as a result of this activity.

- Installation to power and control wiring from the process system to the well heads, and installation of valves and other associated flow control devices.

- Well Head Housing: Each extraction well will be equipped with a well head housing enclosure. This structure will be constructed of metal components, insulated and heated, and provided with an electrical service. Three walls and the roof of this structure will be removable for ease of maintenance of the well and well head components and appurtenances.

This work will include installation of a concrete foundation, including the requisite excavation, compaction, formwork, and finishing. The metal structure will be constructed of lightweight metal structural components, wall and roof panels, and will not require extraordinary hoisting or construction techniques. The electrical service for the heating, lighting, and control features will be powered and routed from the process facility building and are considered minimal in nature.

The work involved in constructing these structures involves what are considered normal industrial hazards (NIH), and are not expected to encounter any hazardous conditions or constituents.

- Extraction and Reinjection Influent and Effluent Piping: The piping manifold system for the extraction system involves construction of a large amount of double walled piping in order to meet the RCRA secondary-containment requirements for transporting hazardous waste, in this case the F001-listed groundwater. The reinjection system does not require double wall pipe; however, the pipe run is very long.

There are no extraordinary construction techniques involved with the construction of this piping; however, it will involve a tremendous amount of welding. Most of the piping is installed above ground; there is, however, a section that will be required to be buried in order to transect a roadway.

The work involved in constructing these structures involves what are considered NIH and are not expected to encounter any hazardous conditions or constituents.

This work does involve construction and quality inspections, which will be rigorous, particularly welded joints on the double wall pipe.

Process System Enclosure—The process system enclosure is the building that houses the water treatment system. The following work describes the foundation, building, heating, ventilation, and the building's electrical system.

- The building foundation involves normal industrial practices for installation. This work will include installation of a concrete foundation, including the requisite excavation, compaction, formwork, and finishing. The foundation will involve construction of secondary containment features, including curbing, sloped floors, trenches, and catch basins; additionally, areas designated to act as a secondary containment will be coated with an impermeable coating to prevent leaching of any potential spills. Particular attention will be paid to inspection requirements of these secondary containment features.

- The building will be constructed of structural steel, with metal walls and roof. This building will require a crane for hoisting the structural columns and beams in place, this work involves normal industry practices for installation.

- There are minimal heating and ventilation features within this building. Electrical light fixtures and outlets will be provided for maintenance. An electrical room will be installed that will have a service panel which services the building, the process system, and the outlying well heads. This work involves NIHs, and will be installed using normal industrial practices.

- A potable water line will be brought into the building from a service line that is just adjacent to the new building.

- The work involved in constructing these structures involves what are considered NIH and are not expected to encounter any hazardous conditions or constituents.

- This work does involve construction and quality inspections that will be rigorous, particularly secondary containment features.

Process System—The following process system consists of equipment, piping, pumps, tanks, and controls necessary to support parallel air stripper trains:

- The process system materials and equipment are off the shelf items. There are no special fabrication requirements and the lead-time for these components is typical.

- The installation of the system will be in accordance with normal industry practices for this type of work.

- The work involved in constructing this process involves what are considered NIHs and are not expected to encounter any hazardous conditions or constituents.

- This work does involve construction and quality inspections that will be rigorous, particularly welded joints on the double wall pipe, and tank construction.

4.1.3.4 Construction Completion and Closeout. Upon completion of the construction the Subcontractor and Contractor will perform a facility walkdown and develop a punch list to record deficient items. The walkdown will also include a cold test of individual components to determine that they were constructed and operate in accordance with the design. The Subcontractor then will be given a limited amount of time to correct deficient items followed by a final facility walkdown.

4.1.3.5 Demobilization. After the construction activities and inspections have been satisfactorily completed, and all equipment properly decontaminated, the M&O Contractor will demobilize from the construction site.

4.2 Startup and Operational Testing

After construction is complete, SO testing will be performed on all systems components to ensure that the equipment has been properly installed and operates in accordance with the design specifications. The SO testing will be followed by a treatment system cold test to demonstrate proper operation of the total treatment system. System operational testing will be performed in accordance with written startup and test procedures. For the operational cold test, all O&M procedures required for treatment system operations will be complete. The required O&M procedures are identified in the Phase C O&M plan (DOE-ID 1999a).

Concurrent to the operational cold test the M&O Contractor will conduct a management self assessment of the facility and of the facility's operational readiness. This will include a review of procedures, training, and other items necessary to safely operate the system.

4.3 Prefinal Inspection Activities

The prefinal inspection report provides a means to document the prefinal inspection performed by the DOE-ID, EPA, and IDHW project managers, or their designees, at completion of construction activities for long-term remedial actions or at completion of remediation for short-term remedial actions.

4.3.1 Prefinal Inspection

A prefinal inspection for each component of the OU 1-07B Phase C remedial action will be conducted by the agency project managers, or their designees, prior to initial operations and shakedown of the treatment system. A prefinal inspection checklist will be prepared for use in conducting the inspection and will be agreed to by the agencies prior to performing the inspection. Open items will be recorded during the prefinal inspection and actions will be identified to resolve the open items. At the end of the inspection the agencies will determine which open items require closure prior to proceeding with treatment system operation with contaminated water.

4.3.2 Prefinal Inspection Report

A prefinal inspection report will be prepared to document the results of the prefinal inspection. The report will identify the open items from the inspection, the agreed upon action for closing the open items, and the scheduled closure date for each open item. The prefinal inspection report will be prepared as a secondary document for review by the agencies. The prefinal inspection report will include the following:

- Completed prefinal inspection checklist
- Identification of open items
- Actions and schedule for closure of open items
- SO testing and operational cold test results

- Planned date for final inspection, if necessary.

4.4 Final Inspection Activities

The need for a final inspection will be determined by the agencies based on the results of the prefinal inspection.

4.4.1 Final Inspection

If required, the final inspection will focus on closure verification of the prefinal inspection open items and satisfactory completion of the shakedown period.

4.4.2 Final Inspection Report

As defined in the RD/RA SOW a final inspection report will be prepared for each remedy component. Each final inspection report will address the following:

- Results of the final inspection, if performed
- Evaluation of the effectiveness in meeting treatment system performance requirements based on the results of the shakedown period
- Resolution of outstanding items from the prefinal inspection report
- Explanation of any changes from the remedial design and RAWP
- O&M plan update, if necessary.

4.5 Initial Operations and Shakedown Period

Initial treatment system operations with contaminated groundwater will begin after satisfactory closure of prefinal inspection open items. The initial operations will include a shakedown period to verify that the treatment system is meeting system performance requirements. The operational shakedown period will be used to carefully monitor Phase C treatment SO to ensure that each system is operating in accordance with the approved specifications, is operational and functional, and is compliant with ARARs.

Further operational shakedown requirements are detailed in the Phase C O&M plan.

4.6 Remedial Action Report

As specified in the RD/RA SOW, a single remedial action report will be prepared for OU 1-07B after all components of the remedy have been implemented and are operational. For earlier components of the remedy, a final inspection report for each of the components will be prepared and submitted. Each of the earlier final inspection reports will be updated as necessary and incorporated into the remedial action report. In accordance with FFA/CO Section XII, the draft remedial action report will be submitted within 60 days after the final inspection of the last remedial action component. The remedial action report will be a primary document with draft, draft final, and final submittals. The milestone date for this document will be established in Section 6 after the last component of the remedy is implemented.

The remedial action report will address the following;

- Summary of remedial action components as defined in this RAWP
- Explanation of changes to the remedial design and RAWP
- Summary of the results from operational testing, the shakedown period, and the final inspections
- Evaluation of the effectiveness in meeting treatment system performance requirements
- Documentation of closure of any open items from the final inspection reports
- Summary of data collected during the remedial action that support a determination that the remedy is operational and functional
- Certification that the remedy is operational and functional
- Identification of documentation necessary to support deletion of the site from the National Priorities List
- O&M plan update, if necessary
- Groundwater monitoring plan update, if necessary
- Decontamination and decommissioning (D&D) plan, if necessary.

5. OPERATIONS AND MAINTENANCE

The O&M of Phase C remedial action components is covered in the *Phase C Final Operations and Maintenance Plan for Test Area North Groundwater Remediation Operable Unit 1-07B* (DOE-ID 1999a). The O&M plan supports the Phase C RAWP and identifies the approach and requirements for the O&M activities during the OU 1-07B Phase C remedial action. Phase C of the remedial action covers the implementation of the final remedy for the remediation of the contaminated groundwater at TAN. The first remedy component, the NPTF, covers the medial zone of the contaminated groundwater plume and provides for early implementation of Phase C in accordance with the OU 1-07B ROD and subsequent ESD to the ROD. Design and construction of the NPTF and future remedy components is addressed in this RAWP. Additional remedy components for the hot spot and the distal zone of the plume will be added after completion of Phase B treatability studies. The scope of the O&M plan includes treatment facility O&M, groundwater monitoring, remedy 5-year reviews, and the final O&M report. After completion of the Phase B treatability studies and the agency decision for the final remedies for the hot spot and distal zone, the O&M plan will be revised to incorporate the other final remedy components. The following are brief descriptions of the sections from the O&M plan:

- Operations and Maintenance
  - This section discusses and covers the routine O&M of Phase C systems as they come on line. This includes identification and discussion of operating parameters, O&M procedures, inspection requirements, and waste management requirements. The operating parameters discussed are operational uptime requirements, upset conditions, and unplanned maintenance. The procedures that are outlined pertain to O&M of Phase C treatment systems and ancillary facilities. The inspection requirements discussed are those that are driven by regulations or considered as good management practice.
- Remedy Performance Monitoring
  - This section discusses and covers compliance monitoring requirements, long-term performance monitoring, and groundwater monitoring. Compliance monitoring will be used to ensure the facilities are operating in compliance with treated water effluent and air emissions ARARS. Long-term performance monitoring will be used to provide a periodic assessment of each treatment systems ability to impact overall plume dynamics as planned. Groundwater monitoring will be used to provide a periodic assessment of plume dynamics through routine and statistical monitoring of contaminant distribution.
- Remedy Performance Review and Closure
  - This section discusses and covers 5-year reviews and the O&M report. The 5-year review section identifies the methods and criteria for measuring performance of the remedy during the remediation time frame. The purpose of the O&M report will be to provide information that will support an agency decision that the active remedial action has been successful in supporting the RAOs.

- Institutional Controls
  - This section discusses and covers planned administrative and engineering controls to protect current and future users from health risks associated with groundwater contamination.
- Decontamination and Decommissioning

This section addresses the requirements for interim decontamination and final D&D.

- Reports
  - This section provides a summary of the reporting requirements during Phase C O&M. Reports that are covered include:
    - National Emission Standards for hazardous air pollutants
    - Routine operations reporting
    - Groundwater monitoring reporting
    - Five-year review reports
    - O&M report.
- Safety, Health, and Quality
  - This section identifies where and how safety, health, and quality requirements are covered for Phase C activities.

6. DECONTAMINATION AND DECOMMISSIONING

Decontamination is a process whereby contaminants that have accumulated on or in equipment, tools, or treatment systems, are removed or neutralized such that they no longer present a hazard to human health or the environment. Decontamination efforts associated with OU 1-07B have been grouped into two activities. Those that are involved with day-to-day operations and investigations (interim decontamination) and those that are associated with the final shut down and decommissioning of any treatment facilities used to remediate the OU (final decontamination).

6.1 Interim Decontamination

Detailed procedures for decontamination can be found in the *Interim Decontamination Plan for OU 1-07B* (INEEL 1998b).

Decontamination of the tanks, containers, and equipment used for the remedial actions associated with OU 1-07B involves removal and disposal of wastes present in the containers, and decontamination of the interiors of tanks, containers, and associated ancillary equipment that were in contact with waste, as necessary. Decontamination consists of rinsing the item to be decontaminated with water to meet the performance criteria in the interim decontamination plan. Spent decontamination water and other liquid waste streams generated during the decontamination process will be assessed for compatibility with GWTF operations. Those streams that are compatible will be transferred to the NPTF for processing with the surge tank contents. Those waste streams that are not compatible with NPTF operations will be sampled and analyzed for characterization in accordance with the WMP (INEEL 1998c).

6.2 Final Decontamination and Decommissioning

Final D&D of OU 1-07B treatment systems will be addressed after the agencies determine that the active remediation is complete and/or that the treatment systems are no longer required. The D&D requirements for each treatment system will be addressed in future D&D plans. The timing of the preparation of the future D&D plans is addressed in the Phase C O&M plan. In general, the D&D plans will direct that, for the facilities built to remediate OU 1-07B, all tanks, containers, piping, and equipment will be flushed with clean water to remove as much contamination as possible. The system will be dismantled and made ready for decontamination as directed by management. Components that can be decontaminated will be released for use in other systems or disposed as industrial waste. The site will be returned to its preoperation condition to the extent feasible considering cost and intended future use.

The wells that are placed in the area will continue to be used for monitoring the aquifer, or will be abandoned in accordance with INEEL procedures. Other equipment and facilities installed during the remediation activities will be dismantled, decontaminated, and disposed in accordance with INEEL policy and procedures.

The OU 1-07B CERCLA waste storage unit (CWSU) adjoining the hot spot site will be left "as-is" for storage as needed. The waste stored within will be processed and disposed as addressed in the WMP. These CWSUs may be moved to other locations if the need arises.

7. WASTE MANAGEMENT

All wastes generated during OU 1-07B remedial action and treatability study activities will be managed in accordance with applicable waste management requirements including those contained in the *Waste Certification Plan for the Environmental Restoration Program* (INEEL 1996) and the *INEEL Reusable Property, Recyclable Materials, and Waste Acceptance Criteria* (DOE-ID 1997d). All waste management activities will be conducted in accordance with the applicable substantive requirements of the RCRA. The specific requirements for waste identification, characterization, segregation, packaging, labeling, storage, and inspection applicable to OU 1-07B are identified in the *Waste Management Plan for TAN Final Groundwater Remediation* (INEEL 1998c).

Specific waste management regulatory issues that are applicable to OU 1-07B are summarized in the following section. These include:

- RCRA listed waste
- Toxic Substance and Control Act (TSCA) regulated waste
- Low-level radioactive waste.

7.1 Resource Conservation and Recovery Act Listed Waste

7.1.1 Listed Waste Determination

The TSF-05 injection well was drilled in 1953 to a depth of 93 m (310 ft) to dispose of liquid effluent generated from the Aircraft Nuclear Propulsion (ANP) project. Discharges to the well include organic sludges, treated sanitary sewage, process wastewater, and low-level radioactive waste streams. The principal VOC discharged was TCE. Estimates of the volume of TCE discharged to the well range from 1,325 to 97,161 L (350 to 25,670 gal). Previous evaluations of the solvents used at TAN concluded that the waste discharged to the injection well was not a RCRA-listed hazardous waste because the organic chemicals in the waste were not used as solvents or for degreasing and actual usage practices are not known (DOE-ID 1995).

In April 1997, based on new information, it was determined that a RCRA-listed solvent, TCE, was disposed at the TAN Facility via the TSF-21 valve pit. Since the valve pit is connected with the TSF-05 injection well, the injection well and associated groundwater contamination plume are considered to contain RCRA-listed wastes. The RCRA-listed waste classification, waste code F001, is therefore applicable to the TCE contaminated TAN groundwater and associated waste streams, and the substantive requirements of the ARARs are applicable for the RCRA-listed waste (INEEL 1997a). The listed waste determination was implemented for OU 1-07B for waste that was not previously determined to be characteristic based on an OU 1-07B Waste Management Compliance Commitments and Schedule dated July 22, 1997, and that was concurred with by the agencies per DOE letter of August 29, 1997.[b]

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b. Letter from K.E. Hain (DOE-ID), Manager of Environmental Restoration Program, to K. L. Falconer (INEEL), Director of Environmental Restoration, DOE-ID Letter OPE-ER-129-97, August 29, 1997.

7.1.2 No-Longer Contained-In Determination

Environmental media are considered to potentially contain RCRA-listed hazardous wastes if there was a release to the media that included these wastes (40 CFR 261.3 "Identification and Listing of Hazardous Waste)." Of the options available to manage wastes containing low to nondetectable concentrations of listed wastes, a no-longer contained-in determination (NLCID) may be requested for these environmental media, soil, and groundwater. Until a NLCID is made for the OU 1-07B waste streams, that media will be managed as a listed hazardous CERCLA waste in accordance with the WMP (INEEL 1998c). The NLCIDs that have been approved are attached to the WMP.

7.2 Toxic Substances and Control Act Regulated Wastes

In the 1950s, the V-Tanks were installed to store liquid radioactive waste generated at TAN prior to treatment. Liquid wastes were pumped to these tanks from the TSF laboratories and craft shops, hot and warm shops, a radioactive decontamination shop, hot cells, and the Initial Engine Test Facility. In 1968, approximately 227 L (60 gal) of oil was discovered in Tank V-2, reportedly from a spill of hydraulic oil in the hot cell. This oil was subsequently removed in 1981 and sampled. The analysis of the oil revealed polychlorinated biphenyl (PCBs) (Aroclor 1260) concentration up to 680 mg/kg.[c] The PCBs have been identified in all three tanks with maximums of 660 mg/kg in V-1, 260 mg/kg in V-2, and 400 mg/kg in V-3 (see Footnote c). The V-tanks have not been used since the early 1980s. Treatment for the liquid radioactive waste, when the V-tank system was in operation, consisted of processing the liquid waste through the evaporator in TAN-616 (and later the PW-2 system) to concentrate the radioactive waste. The wastewater from the evaporator system was discharged to the warm waste system and then to TSF-05.

Recent sampling events at TSF-05 have shown that the PCB concentration in the sludge at the bottom of the well is 6 mg/kg. Since this is less than the 50 mg/kg addressed in 40 CFR 761, the waste generated during the remedial actions at OU 1-07B will be managed as not containing PCBs until such time as sampling shows that the sludge in TSF-05 has PCB concentrations of 50 mg/kg.

7.3 Low-level Radioactive Waste

Low-level radioactive waste will be generated during OU 1-07B activities. This waste is the result of radionuclide contamination in the TSF-05 injection well and is primarily associated with the sludge that is recovered from the TSF-05 well. This radioactive waste also normally contains RCRA F001 listed waste and, therefore, is classified as listed-mixed waste.

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c. Letter from Carlos Tellez (INEEL), Director of Environmental Affairs, to Dan Duncan (EPA), TSCA Program Manager, INEEL Letter CLT-84-97, September 3, 1997.

8. EMERGENCY RESPONSE

Emergency response is covered by the *INEEL Emergency Action (EA)/RCRA Contingency Plan Addendum for TAN Facilities* (INEEL 1997b). Section 11 of the OU 1-07B HASP contains primary emergency response actions for OU 1-07B site personnel, initial responses, task site responsibilities, emergency equipment at the task site, emergency response teams, and notification lists. This section of the HASP supplements the INEEL EA/RCRA contingency plan. Copies of both of these documents are kept in the OU 1-07B office located in Building TAN 607. A copy of the HASP will also be kept in the hazardous communications center located at the OU 1-07B remediation site.

The INEEL EA/RCRA contingency plan includes emergency response organizations and operational emergency event classes of fires, explosions, radiological releases, nonradiological releases, natural phenomena, loss of power, criticalities, safeguards and security, and external events. Sections 5 through 14 of the INEEL EA/RCRA contingency plan address notifications and communications, consequence assessment, protective actions, medical support, recovery and reentry, public information, emergency facilities, training (in the OU 1-07B HASP), drills and exercises, and program administration. Appendix L4 of the INEEL EA/RCRA contingency plan contains the TAN GWTF Appendix "L." This appendix is specific to the OU 1-07B project and defines specific measures and criteria used for OU 1-07B activities.

Emergency actions are primarily governed by Section 11 of the HASP; however, when emergencies result that are beyond the limitations of the HASP, the INEEL EA/RCRA contingency plan will be implemented. Therefore, in the event of an emergency, initial responders shall follow the direction of the HASP unless the resulting emergency is designated as a fire, explosion, or an uncontrolled release to the environment in which case the INEEL EA/RCRA contingency plan will be implemented.

9. QUALITY ASSURANCE PROGRAM

The RAWP is intended to be used in conjunction with the *Quality Assurance Project Plan for WAGs 1, 2, 3, 4, 5, 6, 7, 10 and Inactive Sites* (QAPjP [DOE-ID 1997e]) and the *Implementing Project Management Plan for the INEEL Remediation Program* (INEEL 1997c).

The most important activities associated with the Phase C remedial action with respect to quality assurance are the data collection and analysis activities for compliance and performance monitoring. The quality assurance for these activities is described in detail in the Phase C O&M plan, for compliance monitoring, and the Phase C groundwater monitoring plan for routine and performance evaluation groundwater monitoring.

10. SAFETY AND HEALTH PROGRAM

The safety and health requirements for Phase C remedial action activities include the areas of industrial safety, industrial hygiene, fire protection, radiation safety, and emergency preparedness. Safety and health requirements in accordance with OSHA Standard 29 CFR 1910.120 and 1926.65 "Hazardous Waste Operations and Emergency Response" are designed and established to provide a safe and healthy work environment. Safety and health requirements are being implemented at the INEEL through the DOE Integrated Safety Management System (ISMS) and the Voluntary Protection Program (VPP). The ISMS and VPP provide for the integration of hazard identification and mitigation into the work control process for construction, operations, and maintenance activities.

Specific Phase C health and safety requirements, including hazard identification and mitigation, are addressed in the *Test Area North Final Groundwater Remedial Action Operable Unit 1-07B Health and Safety Plan,* (INEEL 1999b). The safety and health requirements in the HASP cover all planned Phase B and Phase C remedial action activities.

11. COST AND SCHEDULE

This section addresses cost, schedule, and deliverables to Phase C remedy components and activities. Also included is a cost comparison of the current project baseline and the cost estimate in the 1-07B ROD. The current project baseline includes a refined cost estimate for NPTF construction based on the *New Pump and Treat Facility 90% Draft Remedial Design* (DOE-ID1999b). As remedy components for the hot spot and distal zone are added, this section will be revised to update the cost estimate and provide more detail schedule information with respect to those components.

11.1 ROD Cost versus Current Baseline

Outyear funding availability for RD/RA projects is subject to congressional approval of DOE budgets. The DOE has identified adequate funding in existing budget plans for this project. Table 11-1 contains the project cost estimate from the OU 1-07B ROD and the Fiscal Year-98 baseline estimate. This estimate and the assumptions contained in it may be used for comparison throughout the project. Depending on the outcome of the specified ROD and RD/RA SOW decision points, the actual remediation costs are expected to be within -30 to +50% of the ROD cost estimate.

11.2 NPTF Construction Estimate

The Federal Acquisition Regulations Subpart 36.203(c) states that a detailed cost estimate cannot be disclosed to the public until the contract is awarded. The Phase C RAWP is a public document and as such cannot contain detailed cost information related to NPTF construction or other Phase C activities or tasks that might be competitively bid. A detailed construction cost estimate will be developed during the remedial design and will be used to verify the accuracy of any selected subcontractors remedial action cost estimates. Table 11-2 provides a divisional breakdown of the NPTF construction costs. This estimate is based upon the NPTF 90% design being provided with this RAWP. This estimate covers the cost of constructing the facility and connecting to existing utilities. Operational and D&D for the NPTF are covered in the overall project baseline cost identified in the previous section.

11.3 Schedule

The documents submitted to the EPA and IDHW as deliverables are presented in Table 11-3 with their corresponding submittal dates in accordance with Section XII of the FFA/CO. Milestone deliverable dates presented in Table 11-3 were established in the RD/RA SOW, and where applicable, as modified by subsequent agency agreement. This table and the subsequent schedule only include deliverables up through the initiation of the remedial action. This table will be updated as necessary as future components of Phase C are presented through a revision to this RAWP.

Documents will have expedited and nonexpedited review and revision schedules. The review periods vary depending on the document. In general, all expedited draft primary documents have a 30-day review, and in some instances the draft final submittal has been eliminated. Draft primary documents (nonexpedited) have the standard 45-day review period. Secondary documents will have their standard 30-day review period. The DOE review will be concurrent with the EPA and IDHW review. Figure 11-1 is the schedule of activities for NPTF construction up through initiation of operations.

Table 11-1. OU 1-07B cost summary.

Work Package	Description	ROD Cost Estimate[a] FY-95 $	Baseline Cost Estimate[a, b] FY-98 $
WP-2	Operation Transition from Phase A to Phase B	1,357	2,490
WP-3	Sludge Treatment/Disposal	92	10
WP-4	Pre-ROD Scoping	450	443
WP-5	Cleanup Technical Administrative Activities	1,862	9,597
WP-7	Hot spot Containment/Removal	3,325	4,708
WP-8	NPTF Extraction Wells	212	1,300
WP-9	Phase C Remediation Operations	23,718	17,795
WP-10	Groundwater Monitoring	3,870	5,220
WP-11	Hydrology and Treatability Studies	4,828	11,010
WP-14	NPTF Design and Construction	(d)	2,032
WP-15[c]	NGWTF Design and Construction	(d)	3,180
WP-16[c]	DPTU Design and Construction	(d)	2,420
	Contingency	7,902	–
	TOTAL	47,616	60,205

a. Dollars are in the thousands.

b. The baseline cost estimate includes actual cost through FY 98 and baseline estimated cost for FY 99 through FY 26.

c. Estimates for WP-15 and WP-16 are rough order of magnitude (these work packages are included in the baseline as a planning package).

d. In the ROD, these costs were included under the line item for WP-9, Phase C Remediation Operations.

Table 11-2. NPTF 90% construction cost estimate.

Operation	Cost $	
Site Work		55,975
Concrete		89,693
Building/Enclosure		160,319
Structure	87,306	
HVAC	27,090	
Well head Enclosures	45,923	
Process System		612,104
Equipment	117,844	
Instrumentation and Control	142,500	
Internal Piping	70,911	
Influent Piping	136,819	
Effluent Piping	64,385	
Well Pumps	79,645	
Utilities		104,569
Subtotal Direct Construction Cost[a]		1,022,660
Contingency (20%)		161,507
Reinjection Well and Monitoring Well		250,000
Construction/Project Management		174,728
TOTAL		1,608,895

a. Direct Construction costs do not include O&M contractor adders.

Table 11-3. OU 1-07B deliverables log.

Deliverables	Submittal Planned Date	Submittal Enforceable Date	Review Length (days)	Document Type
Treatability Studies				
Phase I FDR (Draft)	01/26/00	01/31/00	45	Primary
Phase II FDR (Draft)	04/27/01	04/30/01	45	Primary
Dissolved Phase Medial Zone Groundwater Treatment				
Draft NPTF Functional and Operational Requirements	12/05/97	N/A	45	Disputable
NPTF (30%) Design	09/29/98	N/A	30	Secondary
Draft RD/RAWP-NPTF	04/02/99	04/30/99	45	Primary
Dissolved Phase Distal Zone Groundwater Treatment				
DPTU (30%) Design	(a)	N/A	30	Secondary
RD/RAWP Revision – DPTU	(a)	(a)	45	Primary
Hot spot Containment and/or Removal				
NGWTF (30%) Design	(a)	N/A	30	Secondary
Draft RD/RAWP Revision-NGWTF	(a)	(a)	45	Primary
Phase C Deliverables				
Five-year Review Implementation Plan	10/31/00	N/A	30	Secondary
Remedial Action Report	(b)	(b)	45	Primary
Operations and Maintenance Report	(c)	(c)	45	Primary

a. To be determined in the subsequent revision to this RAWP

b. To be determined in future Five Year Review Reports

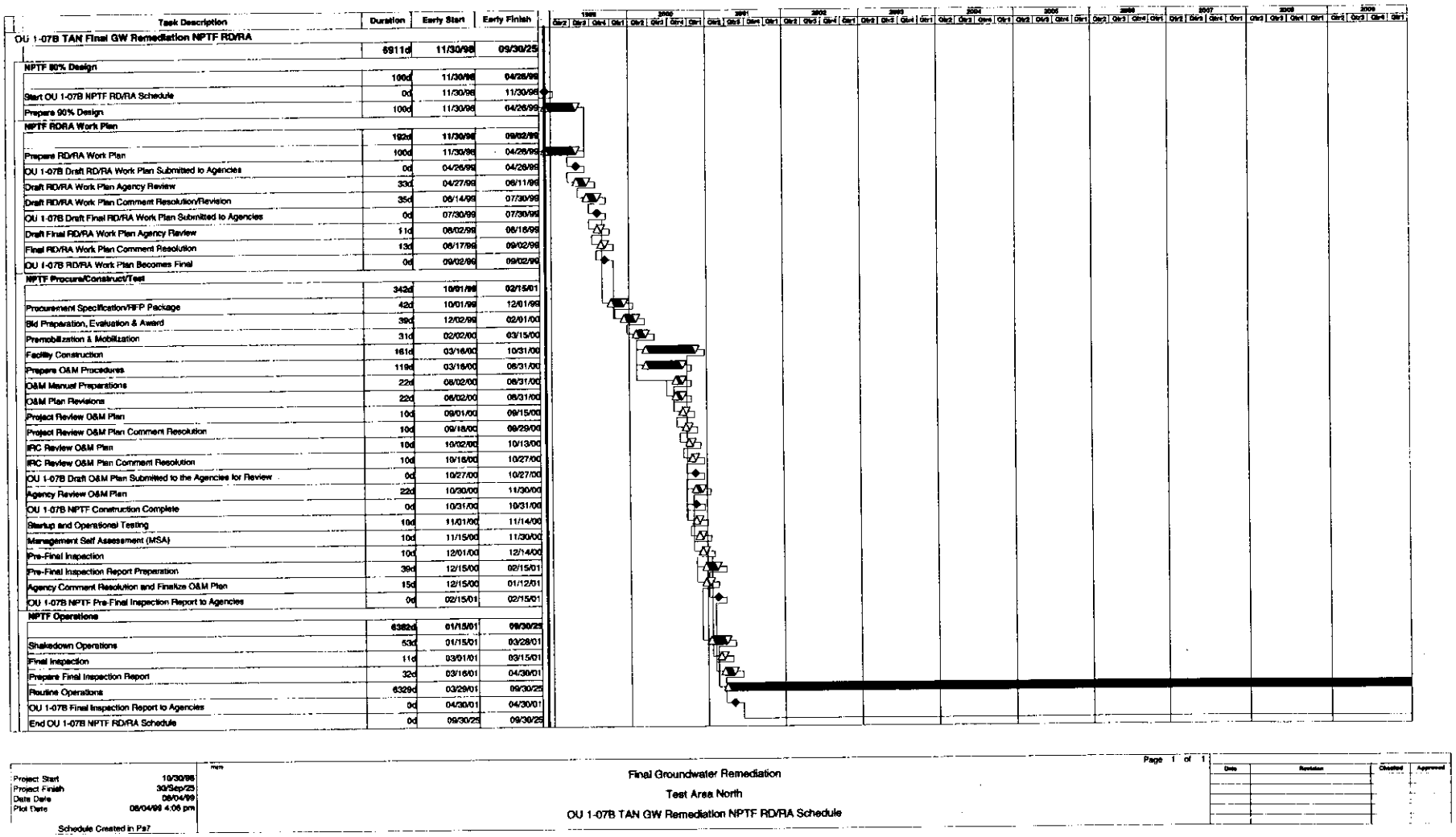

Figure 11-1. NPTF construction schedule.

12. REFERENCES

42 USC§6901 et seq., *United States Code*, "Comprehensive Environmental Response, Compensation, and Liability Act of 1986 (CERCLA/Superfund)."

DOE-ID, 1991, *Federal Facility Agreement and Consent Order,* U.S. Department of Energy Idaho Operations Office, U.S. Environmental Protection Agency Region 10, State of Idaho Department of Health and Welfare.

DOE-ID, 1993, *Remedial Design and Remedial Action Guidance for the Idaho National Engineering Laboratory*, U.S. Department of Energy, Idaho, DOE-ID/12583-152, Revision 1, October.

DOE-ID, 1994a, *Feasibility Study Report for Test Area North Groundwater Operable Unit 1-07B at the Idaho National Engineering Laboratory*, U.S. Department of Energy, Idaho, EGG-ER-10802, Revision 0, January.

DOE-ID, 1994b, *Remedial Investigation Final Report with Addenda for the Test Area North Groundwater Operable Unit 1-07B at the Idaho National Engineering Laboratory*, U.S. Department of Energy, Idaho, EGG-ER-10643, Revision 0, January.

DOE-ID, 1995, *Record of Decision, Declaration for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites Final Remedial Action, Operable Unit 1-07B, Waste Area Group 1,* Idaho National Engineering Laboratory, U.S. Department of Energy, Idaho, August.

DOE-ID, 1997a, *Well TSF-05 Surge and Stress Evaluation Report for Operable Unit 1-07B,* Idaho National Engineering Laboratory, U.S. Department of Energy, Idaho, DOE/ID-10558, February.

DOE-ID, 1997b, *Remedial Design Remedial Action (RD/RA) Scope of Work TAN Final Groundwater (GW) Remediation OU 1-07B,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10522, Revision 5.

DOE-ID, 1997c, *Technology Evaluation Work Plan Test Area North Final Groundwater Remediation Operable Unit 1-07B (Draft),* Idaho National Engineering Laboratory, U.S. Department of Energy, Idaho, DOE/ID-10562, March.

DOE-ID, 1997d, *INEEL Reusable Property, Recyclable Materials and Waste Acceptance Criteria,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10381, Revision 7, February.

DOE-ID, 1997e, *Quality Assurance Project Plan for WAGs 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites,* U.S. Department of Energy Idaho Operations Office, DOE/ID-10587, current issue.

DOE-ID, 1999a, *Phase C Final Operations and Maintenance Plan for Test Area North Groundwater Remediation Operable Unit 1-07B*, U.S. Department of Energy, DOE/ID-10684, April.

DOE-ID, 1999b, *New Pump and Treat Facility 90% Draft Remedial Design Test Area North Operable Unit 1-07B*, U.S. Department of Energy Idaho Operations Office, DOE/ID-10661, March.

INEEL, 1996, *Waste Certification Plan for the Environmental Restoration Program,* Idaho National Engineering and Environmental Laboratory, current issue.

INEEL, 1997a, *Explanation of Significant Differences from the Record of Decision for the Technical Support Facility Injection Well (TSF-05) and Surrounding Groundwater Contamination (TSF-23) and Miscellaneous No Action Sites, Final Remedial Action, Operable Unit 1-07B, Waste Area Group 1, Idaho National Engineering and Environmental Laboratory*, Idaho National Engineering and Environmental Laboratory, INEEL/EXT-97-00931, Revision 0.

INEEL, 1997b, *INEL Emergency Plan/RCRA Contingency Plan*, Idaho National Engineering and Environmental Laboratory, PLN-125 (formerly QPP-149), current issue.

INEEL, 1997c, *Implementing Project Management Plan for the Idaho National Engineering and Environmental Laboratory Remediation Program (PMP),* INEEL/EXT-97-00032, Section 13, Quality Assurance.

INEEL, 1998a, *Well Characterization and Evaluation Report Supporting Functional and Operational Requirements for the New Pump and Treat Facility at Test Area North Operable Unit 1-07B,* Idaho National Engineering and Environmental Laboratory, INEEL/EXT-97-01356, Revision 0.

INEEL, 1998b, *Interim Decontamination Plan for OU 1-07B*, Idaho National Engineering and Environmental Laboratory, INEEL/EXT-97-01287, Revision 0.

INEEL, 1998c, *Waste Management Plan for TAN Final Groundwater Remediation,* Idaho National Engineering and Environmental Laboratory, INEEL/EXT-98-00267, Revision 1.

INEEL, 1999a, *Phase C Groundwater Monitoring Plan Test Area North, Operable Unit 1-07 B,* Idaho National Engineering and Environmental Laboratory, INEEL/EXT-99-00021, Revision 0.

INEEL, 1999b, *Test Area North Final Groundwater Remedial Action Operable Unit 1-07B Health and Safety Plan,* Idaho National Engineering and Environmental Laboratory, INEEL/EXT-99-00020, Revision 0.

Appendix A

Compliance with Regulatory Requirements

Table A-1. Compliance with regulatory requirements.

Category	Regulatory Requirements	Implementation Strategy
Chemical - Air Discharges (Carcinogens and Noncarcinogens)	Idaho Toxic Air Pollutants For all sources constructed or modified since May 1, 1994, the net screening emissions levels (EL) and net acceptable ambient concentrations (AAC) for non-carcinogens which are not specifically controlled elsewhere in Idaho Administrative Procedures Act (IDAPA) regulation will comply with the table identified in IDAPA 16.01.01.585. For all sources constructed or modified since May 1, 1994, the net screening ELs and AAC for carcinogens which are not specifically controlled elsewhere in these rules, are as provided in the table identified in IDAPA 16.01.01.586. IDAPA 16.01.01.585 and IDAPA 16.01.01.586.	For air emissions for the NPTF treatment system, modeling was performed using an EPA approved air modeling program. Air emissions will be established through model results. The results of this modeling will be documented in the Phase C NPTF Design. For air emissions on future Phase C treatment systems, modeling will be performed using an EPA approved air modeling program. The results of this modeling will be covered in the respective Remedial Design. If the modeling results indicate that the AACC or AAC will be exceeded at the receptor locations specified in the ROD, the best available control technology (BACT) will be implemented at the source.
Chemical - Air Discharges (Radionuclide) To-Be-Considered Radiation Protection	Emissions of radionuclides to the ambient air from DOE facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/year. 40 CFR 61.92 Establishes standards and requirements for operations of the DOE and DOE contractors with respect to protection of members of the public and the environment against undue risk from radiation. Includes narrative and numerical standards (air and water) for management of radioactive liquid effluent and radiation protection of the public. In addition, the Order provides radiological protection requirements and guidelines for cleanup of residual radioactive material and management of the resulting wastes and residues, and release of property. DOE Order 5400.5 (To Be Considered)	Emissions from the treatment operations and any construction project(s) will either be calculated as provided under the provisions of 40 CFR 61.93 or estimated through the use of an EPA approved air modeling program. The calculated emissions will be given to INEEL Environmental Affairs personnel for inclusion in the annual INEEL National Emissions Standards for Hazardous Air Pollutants (NESHAPs) Report.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Chemical - Drinking Water Standards (MCLs)	The following are the MCLs per Federal and State drinking water standards, in effect on the date of the ROD signature. Organics — MCL (µg/L) PCE — 5 TCE — 5 cis-DCE — 70 trans-DCE — 100 The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 mrem/year. Radionuclides — MCL (pCi/L) Cesium-137 — 119[d] Tritium — 20,000 Strontium-90 — 8 Uranium-234 — 30 pCi (proposed)[1] IDAPA 16.01.08.050.02 and .05 {40 CFR 141.12 and .16} The State of Idaho Secondary Drinking Water Standards (IDAPA 16.01.08.400.03) are a Chemical-Specific ARAR. These standards establish primary and secondary MCLs. Secondary MCLs are a consideration for in situ chemical oxidation and in situ bioremediation treatability studies because the field evaluation activities will involve the injection of treatment agents (i.e., oxidants and nutrients). Also, oxidation of TCE by potassium permanganate will yield manganese dioxide as a by-product, which may initially exceed the secondary MCL of 0.05 mg/L for total manganese. Secondary MCLs are also a consideration for bioremediation treatability studies where the addition of nutrients	An evaluation of the aquifer will be performed for comparison to MCLs. This will be accomplished through groundwater monitoring and analysis of data for trending to determine if the aquifer can be restored to MCLs within the established reasonable time period of interest (100 years) after ROD signature. If any new radionuclides are identified without existing MCLs, calculations will be performed to estimate radionuclide uptake. Then a back calculation to determine maximum radionuclide activities will be performed, and annual maximum inputs determined. The requirements for collecting and analyzing this data is covered in the Phase C Groundwater Monitoring Plan (data gathering) and the Phase C Operations and Maintenance Plan; Performance Evaluation/5-year review section (analysis). Secondary MCLs were developed as aesthetic guidelines for the public acceptance of drinking water and are not federally enforceable. Secondary MCLs are enforced for all groundwater uses by the State of Idaho through the Groundwater Quality Rule (IDAPA 1601.11.200) adopted by IDHW in March 1997. However, the Groundwater Quality Rule also states that site-specific groundwater quality levels may vary from enforceable standards, based on consideration of effects to human health and the environment, for remediation conducted under state oversight (IDAPA 16.01.11.400.05). Enforceable groundwater quality standards must be achieved at the completion of the restoration time frame, which is specified as year 2095. The pilot-scale study will not result in exceedences at the completion of the restoration time frame. Therefore, although concentrations of manganese or other treatment agents in or near the hot spot or reactive zone may exceed the secondary MCLs as a result of treatability study

[d]The proposed MCL for U-234 is for the U-234, -235, and -238 series. The proposed MCL for Cs-137 is derived from a corresponding 4 rem/yr effective dose equivalent to the public, assuming daily intake of 2 L/day of water.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
	or other amendments may also initially exceed established secondary MCLs.	implementation, this excursion is acceptable because the hot spot and medial zones are not currently drinking water sources due to the high concentrations of contaminants of concern that are present. In situ chemical oxidation and in situ bioremediation are being evaluated for implementation to remove TCE in an attempt to restore the aquifer to drinking water quality within 100 years. Therefore, it is not appropriate to apply secondary MCLs before the end of the restoration period. Institutional controls are part of the remedial action and will be protective of human health and the environment during the restoration time frame.
Action - Air Discharges (Monitoring)	Continuously monitor radionuclide emissions per the requirements in 40 CFR 61.93 if the discharge of radionuclides without pollution control equipment could cause an effective dose equivalent in excess of .1 mrem/yr. If continuous emissions modeling is not required, periodically perform confirmatory measurements to verify the low emissions. 40 CFR 61.93	Emissions for new treatment systems will be calculated in a similar manner as the project annual emissions. The emissions will then be modeled to determine the effective dose equivalent for the nearest public receptor. If effective dose equivalent is greater than .1 mrem/yr then a continuous emissions monitor will be included in the Phase C Remedial Design. If predicted uncontrolled emissions are less than .1 mrem/yr, then uncontrolled emissions will be periodically estimated and documented.
Action - Fugitive Dust	All reasonable precautions will be taken to prevent the generation of fugitive dust. IDAPA 16.01.01.651 identifies examples of reasonable precautions for preventing fugitive dust. IDAPA 16.01.01.650 and .651	During construction activities, all reasonable precautions will be taken to minimize fugitive dust through application of engineering controls. Potential options include: 1) Use of water sprays and dust suppressants 2) Halting construction activities during periods of high winds.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Action - Hazardous Waste Determination	A person who generates a solid waste must determine if the waste is a hazardous waste by using the following method: 1) Determine if the waste is excluded under (40 CFR 261.4) 2) Determine if the waste is listed as a hazardous waste in 40 CFR 261, Subpart D 3) For the purposes of compliance with 40 CFR part 268, or if the waste is not listed in subpart D of 40 CFR part 261, the generator must then determine whether the waste is identified in subpart C (characteristic) of 40 CFR part 261. IDAPA 16.01.05.006 {40 CFR 262.11} Chapter III, 3.d - Waste characterization activities will accurately permit the proper segregation, treatment, storage, and disposal of the low level waste. Characterization will include a determination for solid waste, listed waste, characteristic hazardous components, and applicable Land Disposal Regulation (LDR) requirements. DOE Order 5820.2A (To Be Considered)	Any waste streams generated during the remediation process for storage and/or disposal will have a hazardous waste determination performed. For Phase C waste streams, established characterization information will be used. If needed, sampling will be conducted in accordance with a task specific sampling and analysis plan. Waste minimization activities will be implemented in accordance with the INEEL Reusable Property, Recycle Materials and Waste Acceptance Criteria. Trained personnel will inspect and ensure the storage facility is in compliance with all applicable regulations. The Phase C Waste Management Plan provides the actions and requirements for meeting this standard.
Action - General Waste Analysis	General facility standards require that operators of a facility must obtain chemical and physical analyses of a representative sample of each hazardous waste to be treated, stored, or disposed of at the facility prior to treatment, storage, or disposal. The analysis may include existing published or documented data on the hazardous waste or on hazardous waste generated from a similar processes. At a minimum, the analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with this part and part 268 of this chapter. IDAPA 16.01.05.008 {40 CFR 264.13} DOE 5820.2A (To Be Considered)	Waste stream management requirements are based on analysis supported by a project sampling and analysis plan and process knowledge. This information will provide the basis for determining: container requirements, storage requirements, labeling requirements, and treatment and disposal requirements. All waste (both radionuclide and VOC) generated during remediation operations will be managed through facility procedures in accordance with the INEEL Reusable Property, Recycle Materials and Waste Acceptance Criteria.
Action - Facility Design and Operation	Treatment, Storage, and Disposal (TSD) operators must design, construct, maintain and operate facilities to minimize the possibility of fire, explosion or any unplanned sudden or non-sudden release of hazardous waste to air, soil, or surface water which might threaten human health or the environment. IDAPA 16.01.05.008 {40 CFR 264.31 through .35 and .37}	New and existing facilities will continue to be designed, inspected and operated in compliance with site procedures and the requirements of this section. New treatment systems and any modifications to existing facilities as well as current operations will consider the design and operational requirements of these sections when developing the design requirements.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Action - Closure Performance Standards	The owner or operator must close the facility in a manner that: 1) Minimizes the need for further maintenance, 2) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere, and 3) Complies with the closure requirements of this subpart. IDAPA 16.01.05.008 {40 CFR 264.111} During the partial and final closure periods, all contaminated equipment, structures and soils must be properly disposed of or decontaminated unless otherwise specified in Sections 264.197, 264.228, 264.258, 264.280 or Section 264.310. By removing any hazardous wastes or hazardous constituents during partial and final closure, the owner or operator may become a generator of hazardous waste and must handle that waste in accordance with all applicable requirements of part 262 of this chapter. IDAPA 16.01.05.008 {40 CFR 264.114}	Once remediation activities have achieved compliance with remediation goals, closeout procedures will be implemented. An evaluation of the equipment and storage areas will determine closure requirements and management of the materials, pump and treat equipment, and associated ancillary piping. Emphasis will be placed on minimal site O&M at completion of closure. All equipment, materials, and associated debris generated during project closeout will be adequately characterized to determine waste management requirements.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Action - Container Management	1) Remediation wastes will be kept in containers meeting the requirements of 40 CFR 264.171; 2) Wastes will be stored with compatible containers; 3) Containers will be properly managed; and 4) The storage facility will be subject to inspections under 40 CFR 264.174. 5) The storage area containment system will be in accordance with 40 CFR 264.175. IDAPA 16.01.05.008 {40 CFR 264 Subpart I}	Characterization results via process knowledge or analytical results will dictate the packaging requirements, determine storage requirements, and compatibility with other wastes. Waste containers will be properly labeled and managed in accordance with existing storage facility procedures. All containerized waste will be subject to RCRA storage facility inspection requirements. The containers are stored on raised grated flooring. The flooring will capture any fluids from a leaking drum. Storage facility egress points have dikes to prevent leakage of liquids. The combination of these two controls will provide adequate containment. Containers used to transport water extracted during groundwater sampling, will not be double walled containers. If water is stored in these containers (>3 days) they will be placed in a container storage area with secondary containment. Any new treatment systems and any future facility modifications will be designed to provide adequate containment. These requirements will be covered and implemented through the Phase C Waste Management Plan and respective Phase C Remedial Designs.
Action - Tank Systems	The tank system utilized in processing the remediation waste streams generated during remediation operations will comply with the tank system requirements under 40 CFR 264 Subpart J which includes: 1) Assessment of the tank's system integrity; 2) Containment and detection of releases; 3) General operating requirements; 4) Inspections; 5) Response to leaks or spills; and 6) Closure and Post-Closure care. IDAPA 16.01.05.008 {40 CFR 264 Subpart J}	The tank systems will be inspected once per operating day. The inspection will check for visible and leakage and signs of corrosion, and will also check the leak detection system for indications of leakage. Any new treatment systems and any future facility modifications will be designed to address the need for adequate containment and regulatory requirements. Any deviations from strict regulatory requirements will be defined based on level of risk and agency concurrence. All new tanks used in any new remediation facilities will be certified by an independent qualified registered professional engineer attesting that the tank system has sufficient structural integrity and is acceptable for storing and treating hazardous waste.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Action - Miscellaneous Units	A miscellaneous unit must be located, designed, constructed, operated, maintained, and closed in a manner that will ensure protection of human health and the environment. Permits for miscellaneous units are to contain such terms and provisions as necessary to protect human health and the environment, including, but not limited to, as appropriate, design and operating requirements, detection and monitoring requirements, and requirements for responses to releases of hazardous waste or hazardous constituents from the unit. Permit terms and provisions shall include those requirements of Subparts I through O of this part, part 270, and part 146 that are appropriate for the miscellaneous unit being permitted. IDAPA 16.01.05.008 {40 CFR 264 Subpart X}	An evaluation will be conducted to determine the continued applicability of Subparts I through O to the system for any future modifications.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Action - Emission Standards (Process Vents)	The owner or operator of a facility with process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations managing hazardous wastes with organic concentrations of at least 10 ppmw shall either: (1) Reduce total organic emissions from all affected process vents at the facility below 1.4 kg/h (3 lb/h) and 2.8 Mg/yr (3.1 tons/yr), or (2) Reduce, by use of a control device, total organic emissions from all affected process vents at the facility by 95 weight percent. (b) If the owner or operator installs a closed-vent system and control device to comply with the provisions of paragraph (a) of this section the closed-vent system and control device must meet the requirements of Section 264.1033. (c) Determinations of vent emissions and emission reductions or total organic compound concentrations achieved by add-on control devices may be based on engineering calculations or performance tests. If performance tests are used to determine vent emissions, emission reductions, or total organic compound concentrations achieved by add-on control devices, the performance tests must conform to the requirements of Section 264.1034(c). IDAPA 16.01.05.008 {40 CFR 264 Subpart AA}	For units with greater than 10 ppmw influent waste streams, the INEEL will comply with the 3 lb/hr and 3.1 tons/yr limit. At this time, the GWTF is the only active INEEL unit with the planned potential for a greater than 10 ppmw influent waste stream. In the event that other units begin operations at the INEEL with influent waste streams of greater than 10 ppmw, the issue will be revisited. Engineering calculations and/or effluent monitoring will demonstrate compliance with the facility standard. If organic concentration exceeds 10 ppmw, potential controls include: 1) Implementation of additional controls or modification of the treatment process to meet acceptable levels; and 2) Installation of a closed vent system per the requirements identified in 40 CFR 264.1034 (c). The treatment facility operations will comply with the test methods and procedure requirements provided in section 264.1034, test methods and procedures. Deviations to these requirements will be noted in the Sampling and Analysis Plans. New Treatment Systems will be required to comply with IDAPA 16.01.05.008 {40 CFR 264 Subpart AA}, only when system influent is greater than 10 ppmw.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Action - Land Disposal Restrictions	IDAPA Regulation 16.01.05.011 identifies that all of 40 CFR Part 268 and all Subparts are herein incorporated by reference as provided in 40 CFR, revised as of July 1, 1994, except for 40 CFR Parts 268.5, 268.6, 268.42(b) and 268.44. Except as specifically provided otherwise in this part or part 261 of this chapter, the requirements of this part apply to persons who generate or transport hazardous waste and owners and operators of hazardous waste treatment, storage, and disposal facilities. Restricted wastes may continue to be land disposed as follows: 1) Where persons have been granted an extension to the effective date of a prohibition under subpart C of this part or pursuant to Section 268.5, with respect to those wastes covered by the extension; 2) Where persons have been granted an exemption from a prohibition pursuant to a petition under Section 268.6, with respect to those wastes and units covered by the petition; 3) Wastes that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise prohibited from land disposal under this part, are not prohibited from land disposal if the wastes: a) Are disposed into a nonhazardous or hazardous injection well as defined in 40 CFR 144.6(a); and b) Do not exhibit any prohibited characteristic of hazardous waste at the point of injection; and c) If at the point of generation the injected wastes include D001 High TOC subcategory wastes or D012-D017 pesticide wastes that are prohibited under Section 148.17(c) of this chapter, those wastes have been treated to meet the treatment standards of Section 268.40 before injection.	Wastes generated as a result of remediation efforts will be characterized for determining management requirements. Additionally, each waste stream will be evaluated to determine the applicability of LDRs. Waste streams subject to LDRs will be segregated and consolidated with compatible waste streams, as appropriate, when similar treatment technologies can be utilized. Waste streams generated from implementation of treatment technologies will be captured and appropriately managed based on classification.
Action - Water Quality (Construction and Use of Injection Wells)	The requirements of this state regulation apply to the owner or operator who constructs and operates the GWTF. IDAPA 37.03.03 Section 3020 of RCRA	Any changes to the facility design will incorporate the substantive requirements specified within this IDAPA regulation. Although contaminant concentrations in reinjected groundwater may exceed drinking water standards, the selected remedy employs an extraction, treatment, and reinjection process that substantially improves aquifer water quality. Any new treatment systems will be designed to treat VOCs to below MCLs.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Action - Water Quality (Monitoring)	Monitoring, record keeping and reporting may be required if the well could adversely affect a drinking water source or if injecting a contaminant that could have an unacceptable effect upon the quality of the groundwaters of the state. The state may require where appropriate, but is not limited to, the following: 1) Any injection authorized by the state shall be subject to monitoring and record keeping requirements as conditions of the permit; 2) The frequency of required monitoring shall be specified in the permit; 3) All monitoring tests and analysis required by permit conditions shall be performed in a state certified laboratory or other laboratory approved by the state; 4) Any field instrumentation used to gather data, when specified as a condition of the permit, shall be tested and maintained in such a manner as to ensure the accuracy of the data; and 5) All samples and measurements taken for the purpose of monitoring shall be representative of the monitoring activity and fluids injected. IDAPA 37.03.03.055.01	The existing site monitoring program meets the substantive requirements of the IDAPA regulation.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
To-Be-Considered Fire Protection	Under this DOE requirement, the facility will: 1) Minimize the potential for the occurrence of a fire. 2) Ensure that fire does not cause an on-site or off-site release of radiological and other hazardous material that will threaten the public health and safety or the environment. 3) Establish requirements that will provide an acceptable degree of life safety to DOE and contractor personnel and that there are no undue hazards to the public from fire and its effects in DOE facilities. 4) Ensure that process control and safety systems are not damaged by fire or related perils. 5) Ensure that vital DOE programs will not suffer unacceptable delays as a result of fire and its effects. 6) Ensure that property damage from fire and related perils does not exceed an acceptable level. DOE Order 5480.7A (To Be Considered)	Modification to existing facilities or the design of new facilities will consider Instrumentation/Environmental/Fire Protection requirements that are consistent with current INEEL requirements and existing RCRA Part B requirements.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Location - General Facility Standards. Radioactive Waste Management (Site Selection)	Seismic considerations for portions of new facilities where treatment, storage, or disposal of hazardous waste will be conducted must not be located within 61 meters (200 feet) of a fault which has had displacement in Holocene time. A facility located in a 100-year floodplain must be designed, constructed, operated, and maintained to prevent washout or any hazardous waste by a 100-year flood, unless the owner or operator can demonstrate to the Regional Administrator's satisfaction that: (i) Procedures are in effect which will cause the waste to be removed safely, before flood waters can reach the facility, to a location where the wastes will not be vulnerable to flood waters; or (ii) For existing surface impoundments, waste piles, land treatment units, landfills, and miscellaneous units, no adverse effects on human health or the environment will result if washout occurs. IDAPA 16.01.05.008 [40 CFR 264.18(a) and (b)] DOE Order 5820.2A Chapter III, 3.i (7) - The disposal site selection will be based on evaluation of prospective sites in conjunction with the planned waste confinement technology, and in accordance with the National Environmental Policy Act of 1969 (NEPA) process. The site will have hydrogeologic characteristics in conjunction with the confinement technology that will protect the groundwater. The potential for natural hazards such as floods, erosion, tornadoes, earthquakes, and volcanoes will be taken into consideration during site selection. The siting criteria will also take into account future land use resource development plans, current and projected populations, nearby public facilities, utilities, and the location of waste generation.	Construction activities involving siting a facility will take into consideration: · Site hydrology, geology, and waste characteristics; · Compliance with the NEPA process; · Potential sites must be evaluated for natural hazards such as floods, erosion, tornadoes, earthquakes, and volcanoes; · Areas subject to surface geological processes (i.e., mass wasting, erosion, slumping, landslides, and weathering) which significantly affect the ability of the disposal facility to meet the performance objectives will be avoided; and · Areas that contain known natural resources which, if exploited, cause a failure of the disposal facility cover such that the performance objectives would not be meet, are to be avoided. Current analysis indicates that the TAN facility is not within a 100 year floodplain. If new information indicates otherwise, appropriate precautions will be included in the design.

Table A-1. (continued).

Category	Regulatory Requirements	Implementation Strategy
Location - Historic Preservation	The Secretary of the Interior must be notified in writing whenever DOE finds or is notified in writing by an appropriate historical or archaeological authority that the activities in connection with a project may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archaeological data. The DOE or the Department of Interior must preserve any data that may be lost or destroyed. 36 CFR 800.4(a)(1)(i),(iii)(a)(2); and 36 CFR 800.4(b)	Any expansion to existing facilities or the siting of new facilities will be surveyed to determine any impacts to historical sites.

Appendix B

Agency Phase C Document Review Comments and Resolutions

PROJECT DOCUMENT REVIEW RECORD

DOCUMENT TITLE/DESCRIPTION: New Pump and Treat Facility 90 Percent Design, Draft Phase C Remedial Action Work Plan, and supporting documents for Test Area North Groundwater Remediation

DATE: September 16, 1999 **REVIEWER:** EPA

ITEM NUMBER	SECTION NUMBER	PAGE NUMBER	COMMENT	RESOLUTION
General Comments				
1			Responses to comments on the draft 90% NPTF design documents were reviewed. Based on this review, the following responses are not sufficient, and additional clarification is needed.	No resolution necessary.
2			General Comment 2: The final sentence of this response states that this system can be upgraded (i.e., add more trays to the air strippers) if needed to improve efficiency. Text should be added, possibly in the NPTF design document, stating how many trays can be added, and the expected efficiency of these additions, both in terms of handling additional flow (assume design concentrations remain constant), and also in terms of handling increased concentrations (assume influent of 250 GPM remains constant). This additional text would demonstrate the robustness of this system.	Text will be added that states that the air stripper will be upgradeable and that space will be provided to accommodate future upgrades. The actual efficiency increase due to a single tray or change in flowrate will be dependent on the actual vendor selected.
3			General Comment 5: This comment discussed potential iron and manganese fouling. Although the response to this comment stated that this kind of fouling is not expected, the buildup of mineral scale, which is typical in hard-water environment such as in this aquifer, can be reasonably expected over a 30 year time-frame of operations. The text should state how this common type of buildup will be addressed, including items such as disposal of cleaning wastes.	A procedure will be developed and included as part of the NPTF Phase C O&M Manual which details an inspection schedule and cleaning methods for this equipment. Text will be added to the 90% design indicating this.
4			General Comment 7: The response to this comment states that the system will not start up in the recirculation configuration, although samples will be collected daily to ensure that MCLs are not exceeded in the discharge. If the first daily sample exceeds MCLs, will the system default to recirculation, or some alternative plan, immediately? What is the expected analytical turnaround time to minimize inadvertent disposal of samples greater than MCLs?	Operations and sampling will be done as stated in the text. There is a possibility that MCLs will be exceeded, however, a decision to stop operation will be made on a case by case basis depending on the level of exceedence. A high exceedence level is not expected.
5			Comments 10, 21b, 21c. General responses to these comments state "it [the discharge line size] was selected based on pump	The pump was selected based on flowrate and head calculated for the effluent pipe system using a 2" effluent line. The pump

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			selection ...", and similar statements. Were the pumps selected in advance of the NPTF design? Pumps with 2" outlets are available. In particular, the response to 21c implies that reduction across the pump (inlet versus outlet) is the mechanism which produces the head needed to pump fluid. This explanation of pump dynamics is without a scientific or engineering basis. Also, any head generated as a result of this reduction would be lost immediately with the enlargement to 2" directly after the pump outlet. We reiterate that a pump with a larger diameter outlet is needed to better support this design by preventing possible stresses to this system.	that meets the requirements has a 1-1/2" discharge. This is typical of the selected type of pumps. The pump specified is not being sole sourced as the design specification indicate an "or equal" clause. The 90% design equipment list will be modified to include the "or equal" designation.
6			** Comment 15e. The Crane model results were reviewed. However, these results cannot be interpreted without a manual or a description of the calculations being performed. We still believe that the "T" connection, shown in Figure P-2 of the draft final NPTF document, which blends the two effluent streams from the air strippers, is unacceptable from a hydraulic design standpoint. The Crane modeling is idealized, because it assumes that each flow stream entering the "T" will be equal in flowrate. This will not be true, as referenced in the text at Section 2.5, Page 2-3, which describes that one air stripper influent stream will be held fixed while the other influent stream will vary automatically to maintain a constant water level in the surge tank. Hence, this "T" will be subjected to variable forces. The response to this comment is unacceptable, and this response should include documentation that the momentum forces at the "T" will be dissipated, as currently designed. Otherwise, the variable forces on this "T" may cause leaks over time. (RB)	No change; the issue was discussed during a conference call and it was agreed no change was necessary.
7			** Comment 17 states that air stripper influent air will pass through a filter/bug screen to prevent air stripper fouling. This filter/screen is not apparent in any of the drawings and should be included.	Filter will be added to drawing.

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8			Comment 18b: This comment originally recommended a low water level sensor on the surge tank, to prevent the air stripper feed pumps from running dry. Per the draft final 90% NPTF design and the comment response, this level sensor is not added. Instead the response states that the system will eventually shut down automatically if a low water condition continues. No mechanism for this automatic shutdown is apparent; please provide more detail. Further, Drawing P-1 in the NPTF 90% draft final design still shows a "LSL" ("Level Switch Low") on this surge tank. Clarify the discrepancy between this response and the apparent inclusion of a low water sensor in this drawing.	Comment 18b suggested that a low water level be added to the list of items that initiate a system shutdown. The level sensor is included in the design. It is based on current water level (using the level transmitter) and controlled by the PLC. A low water condition will turn off the discharge pump. It will not initiate a complete system shutdown. This will allow the system to continue processing the water within the air stripper. After which, the system will shutdown.
9			** Comment 21c. The response to this comment is unacceptable as presented. It is important to maintain flow velocities to approximately 5 feet/second or less, as was discussed and agreed to in a prior OU 1-07B telephone conference. Either larger pipes or slow flows are needed to maintain acceptable flow velocities. Please revise the comment accordingly.	The 5 ft/sec value is used to mitigate water hammer. The other two factors that affect water hammer are 1) length of pipe and 2) system components that perform an immediate shutoff of flow. Since the length of pipe is less than 10 ft. and there are no auto shutoff components, the higher velocities are acceptable.
10			Comment 38. The proposed resolution to this comment included the statement that Section 3.2.1 will be revised to state that groundwater sampling will be conducted at a limited number of select wells (including the new MZMW) to provide data to assess NPTF performance. The actual section that discusses NPTF Capture Zone Performance Monitoring Requirements is Section 4.2.1, but there is no mention of the MZMW or sampling of a select number of monitoring wells. Please include the subject text in the correctly referenced section as was proposed in the resolution.	The proposed resolution to the original comment 38 was incorporated into Section 4.3.2 of the O&M Plan. This subsection is specific to NPTF Groundwater Monitoring. The change in section number where the resolution was incorporated was due to the need to re-number the entire section from 3 to 4, and to place the groundwater monitoring requirement into subsection 4.3, Groundwater Monitoring, rather than subsection 4.2.
11			Comment 40b. The resolution to this comment states that a statement regarding flexibility of the monitoring plan included in the introduction of the document may be useful. As data is compiled, particularly in regard to initial performance of the NPTF and evidence of plume stasis or recession is sought, groundwater monitoring requirements are likely to change.	The provision addressing flexibility and anticipated future modifications to groundwater monitoring strategies was incorporated as the second paragraph under Section 4.3, Groundwater Monitoring, of the O&M Plan. See also response to comment EPA 13 below.

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			While there was verbal concurrence over the phone on this point no statement regarding flexibility was found in the text. It is important to include a statement in the document that reflects that the plan anticipates and will incorporate modification to the groundwater monitoring plan as data is compiled and new data requirements are identified. (JR)	
12			What is meant by the statement regarding modifications to the groundwater monitoring plan in Section 2 since it is mentioned as a consequence of selection of alternative remedial technology not as an inherent part of the plan itself.	Section 2 of the GWM Plan identifies in the second paragraph that the current monitoring and related DQOs were developed assuming ISB and NA are chosen as the remedies for the hot spot and distal zones, and that if this assumption changes then different DQOs may apply and the GWM Plan would be revised accordingly. The last paragraph of Section 2 identifies that the groundwater monitoring strategy may also change from the overall perspective of continuing data analysis and changes in plume dynamics. See also response to comment EPA 13 below.
13			Considering the proposed length of time between sample collection and analysis for many analytes under routine sampling schedule (as the statistical sampling analyses and number of locations is limited) flexibility to evaluate data requirements should be ongoing. Supplemental sampling activities should be discussed in the plan.	A statement has been made in the GWM plan that addresses this comment. Section 2, paragraph 2, lines 9 and 10 state "As changing data quality objectives (DQOs) are identified, the monitoring plan will be revised to modify or implement activities designed to address the new objectives." Section 2, paragraph 4, lines 4 and 5 state "Monitoring plans will be modified as appropriate based on continuing data analysis." Since the nature of future data analysis is unknown today it is not possible to specify specific supplemental sampling activity. Rather it is necessary to identify that a process is in place that allows modification of existing plans to meet changing monitoring needs. The Phase C GWM Plan as currently written achieves this goal.
14			Comment 40c. Information included in this response should also appear in the text of Section 3 of the Phase C Groundwater Monitoring Plan. A brief discussion of the sampling activities that will be performed under the ASTD program and	Agree. A new section "3.1.3 Supplemental Sampling" will be added to allow description of sampling programs conducted outside the CERCLA monitoring program. Vertical profile sampling and dissolved gas sampling are the only two

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			information on how these data will be dovetailed together to provide a comprehensive groundwater quality data set should be included in this plan. Please provide additional details to assure that the analytical parameters, analytical methods, collection techniques, and detection limits will be uniform between the two programs and that reporting requirements will incorporate and evaluate data from both programs.	"supplemental" activities planned. In both cases the OU 1-07B program is providing funds to cover procedure preparation, sample analysis, and QA/QC samples and analysis. This statement will be made in the document and will constitute CERCLA acceptance of these supplemental activities in terms of on-site activity management and waste management.
15			No revised draft final WMP was submitted with this package for review. If any changes have been made, a revised WMP should be submitted.	No changes were made to the Waste Management Plan.
16			The Interim Decontamination Plan does not describe how water/steam will be confined to the decontamination pad, especially if a high-pressure water rinse is used. Additional containment will likely be required to prevent release of water/steam beyond the decontamination pad.	The text will be changed to require that the use of this cleaning technique will require the preparation of a Work Plan detailing the methods used to prevent over spray due to high pressure washing. Work will not be allowed to proceed without approval by the projects field supervisor and industrial hygienist.
17			** The Operations and Maintenance Plan does not specify the sequence for the prefinal inspection, the shakedown, and the final inspection. While the final inspection may not be necessary, the Plan, as written, appears to show that shakedown and initial operations precede the final inspection. This sequence should be reversed; both inspections (if needed) should precede the shakedown and initial operations period.	A figure will be added which specifies the sequence of these activities. The sequence will show that a final inspection, if required, will be performed prior to shakedown and operations.
18			** The O&M manual, which is a separate document, should be available for review prior to the prefinal inspection. At that time, items in the list in Section 2.1 of the O&M Plan should be described in greater detail.	As currently stated in the O&M Plan Section 2.1, Page 2-1, the final O&M Plan and the operations manual will be provided to the agencies one month prior to the prefinal inspection.

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Interim Decontamination Plan				
1	3.3	3-1	Please list the MCP-425 unrestricted release limits which are the stated decontamination objective.	<table><tr><th>Type</th><th>Radionuclides</th><th>Removable (dpm)</th><th>Total (fixed + removable) (dpm)</th></tr><tr><td>A</td><td>Transuranics, I-125K, I-129, Ac-227, Ra-226, Ra-228, Th-230, Pa-231</td><td>20</td><td>500</td></tr><tr><td>B</td><td>Th-nat, Sr-90, I-126, I-131 I-133, Ra-223, Ra-224, U-232 Th-232</td><td>200</td><td>1,000</td></tr><tr><td>C</td><td>U-nat, U-235, U-238, and associated decay products</td><td>1,000</td><td>5,000</td></tr><tr><td>D</td><td>Beta-gamma emitters, except Sr-90 and others noted above.</td><td>1,000</td><td>5,000</td></tr><tr><td>E</td><td>Tritium and tritiated compounds</td><td>10,000</td><td>N/A</td></tr></table> A statement will be added to the text that indicates that the project will not exceed the ROD limit of 1:10,000 cumulative carcenogic risk.
2	4.4	4-2 and 4-3	The decontamination method using non-phosphate detergent (described on page 4-6 for decontamination of down-hole equipment) is not included here. If this method will be used, it should be included in Section 4.4. Also, Section 4.4.5 briefly describes radiological survey as a decontamination method. Technically, this is not a decontamination method, but a means to verify whether decontamination is sufficient. A separate section should be included which describes both the radiological survey and the visual inspection methods. This section should include more detail, especially for the radiological survey, such as what type of equipment will be used, and the criteria for this survey. Further description of visual inspection is also appropriate; for example, will small areas of stain be acceptable, or will all stains and discoloration be removed to meet criteria?	a. Section 4.4.1 currently includes a discussion of the subject wipe down method. b. Agree. A radiologic survey is not a decontamination method. This sub-section will be made into a separate section in Section 4. A radiologic survey is the final step in the process dispositioning an item. This survey will be conducted in accordance with MCP-425. This procedure follows the guidelines set forth in 10 CFR 835, occupational radiation protection. c. A new section will be added to Section 4 which provides further clarification to visual inspection requirements. It shall state "for materials and equipment which have the possibility of coming into contact with the project COC will be subject to visual inspection prior to release. The performance criteria for

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				these visual inspections are set forth in Section 3 of this plan. All materials and equipment which may require visual inspection prior to release shall be subject to a pre-use inspection which will note and document any stains or residue present prior to use by the project. The final release criteria is that no additional or new stains may be present for release."
Phase C, Groundwater Monitoring Plan				
3	4.1.2	4-1	This section discusses purging of the groundwater monitoring wells prior to groundwater sample collection using a Hydrolab or equivalent instrument to measure stabilization of field parameter prior to sample collection. The authors should include a statement in the text that the Hydrolab will be calibrated according to the manufactures specifications and that the calibration data will be recorded prior to commencement of pumping and purging operations.	Agree. This is covered in GW sampling TPR-165 and will be referenced in the GWMP.
4	4.2	4-4	This section describes waste management. The Waste Management Plan (WMP) should be referenced, since this section appears to add information not in the WMP, for example, that solid materials will be disposed of at WERF. All relevant information should be in the appropriate document, which is the WMP in this case.	Agree. The Waste Management Plan is the appropriate guide for waste disposition issues. The Waste Management Plan is referenced in this section, and guidance from the Waste Management Plan is provided. However, the third sentence in the second paragraph is misleading and will be revised to say; "This waste will be handled and disposed of in accordance with the OU 1-07B WMP and the WAC of the receiving facility."
O&M Plan				
4	3.1.1	3-4	Text states assumptions used to estimate that the maximum allowable NPTF downtime is 50 days. However, one assumption is that the natural gradient flow rate is "3 m/day (1 ft/day)." This is likely a typographic error; however, if the 3 meters per day is the intended flow rate, then the maximum allowable downtime is only 5 days (assuming that all other assumptions hold). Please correct any errors and show the correct allowable downtime. This section also refers to Appendix A for a spare parts list; Appendix A, which is labeled as a spare parts inventory, does	This is a typo. Text will be corrected.

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			not include this list. Please show this list, even if items are added later on.	
5	4.1.1.4 & 4.1.1.5	4-4	** These sections show equipment and procedures for water and air sample collection, respectively. The text states that no standard operating procedures (SOPs) have yet been written. These SOPs should be included, possibly as an addendum to Appendix B (Sampling and Analysis Plan). Screening for Shipping SOPs should also be included.	As stated in Section 2.1 of this O&M Plan operational procedures will be prepared as part of the final NPTF O&M Plan to be submitted to the agency for review one month prior to the NPTF pre-final inspection.
6	4.2.1	4-5	The text states that "Barometric fluctuations of the potentiometric surface can interfere with determining steady state drawdown over an extended period of time." While it is true that barometric pressure fluctuations affect the elevation of the potentiometric surface, it is not clear to GF why turning the NPTF extraction system off and on is required to estimate the barometric influence on groundwater elevations. If, as stated in Section 4.2.1, the potentiometric surface is being measured over an extended period of time than recording barometric fluctuation of the atmosphere and comparison with coincident potentiometric elevation fluctuation can be used to normalize the barometric influences on the potentiomentric surface. By collecting these data over an extended period of time and comparing it to groundwater elevation fluctuations, the influence of barometric pressure can be estimated without turning the extraction system on and off. Considering the productivity of the SRPA, a steady state condition would be expected to occur relatively quickly and remain relatively stable over time. The authors should consider using barometric data as a means of normalizing the groundwater elevation data as opposed to turning the extraction system on and off which will interrupt the equilibrium of steady state conditions and result in potentiometric surface fluctuations.	No change necessary. The objective of water level measurements is to monitor the performance of the NPTF. This is best accomplished with the proposed change.

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7	4.2.1.1, 4.2.1.3, & 4.2.1.4	4-5 & 4-6	These sections discuss the collection of groundwater elevation data which will be necessary to evaluate the plume dynamics as the extraction system comes on line and groundwater elevations stabilize. The first two sections discuss the frequency of groundwater elevation data as "...on two occasions..." and "...once per quarter for two quarters...". The proposed frequency of water level elevation measurements is not sufficient to readily identify groundwater elevation trends. The last section cited mentions that the groundwater elevation data will be collected using pressure transducers and data loggers. This type of equipment can be set up to acquire data over long periods of time at different frequencies and can be visited weekly for calibration and data acquisition. We suggest that the frequency of data collection be increased during the initial assessment of the effects of the NPTF on plume dynamics. The authors should consider installation of pressure transducers in several key monitoring locations (e.g., in, near, and far from the extraction wellfield) and begin collecting background data well in advance of the commencement of extraction activities. Observing long term trends prior to pumping may indicate seasonal fluctuation and/or localized effects on groundwater elevations as a result of pumping withdrawals from locations other than the NPTF. The transducers should then be left in these locations after the extraction activities begin and water levels measurements recorded at least daily until long term trends are established. The frequency of data collection can be modified as required and the data presented graphically for ease of interpretation.	NPTF water level measurements are a subset of annual water level monitoring. The purpose of NPTF water level monitoring is to assess performance of NPTF.
8	8.3	8-1	The text states that "A groundwater monitoring report will be prepared that discusses the analytical results from the current year's monitoring effort and presents a historical perspective of groundwater monitoring results."	Text changed to specifically indicate that monitoring reports will be prepared biannually and will include both groundwater analytical and elevation data.

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			The authors should state whether or not this monitoring report will be an annual report, and whether it will incorporate groundwater analytical data as well as groundwater elevation data. The text in Section 7.3 of the Phase C Groundwater Monitoring Plan states that reporting will be on a biannual basis as that is the frequency of data collection.	
NPTF 90% Draft Final Design				
9	3	3-1 & 3-2	This section lists three level transmitters and three level control valves. Section 2.5 lists six level control features. The tie-in between these two sections, and corresponding drawings, in unclear. Specifically, the function of level control valve (LCV) 307 (listed in Section 3) is unclear, and it could not be located in drawings. Level switch-low (LSL) 33, 38, 39, and 40, as shown in extraction wells in drawing P1, are not listed in Section 3. LSL, and level switch-high (LSH) 306, also shown in Drawing P1 in the surge tank, is not listed in Section 3. Level transmitters (LT) 308 and 309 are shown in Drawing P2, but not listed in Section 3. Level transmitters 312, 315, and 316 are listed in Section 3, but not found on any drawings. These discrepancies require explanation.	Section 3 is simply a major component list. It is not a complete system parts list. Section 2.5 only discusses three level control features (level control in the tank and level control in both Air Stripper Sumps). LCV-307 is the control valve for the tank. It is shown on Drawings G-4, P-1 and P-10. LSL-33, 38, 39, 40, LSL-306 and LSH-306 will be added to the equipment list. LT-307, 308, and 309 are listed as LT-312, 315, and 316. Text will be changed to resolve discrepancy.
10	Table 4-1		This table should also show anticipated discharge concentrations based on the design influent water concentrations. This would help to demonstrate that this system will not exceed air emission parameters.	A column will be added listing the maximum discharge rate based on max concentration and max flowrate.
11	5	5-1	This section lists assumptions used in this design. The text should discuss consequences if one or more of these assumptions are false.	Text will be added as follows: "If any of these assumptions prove to be incorrect then a system evaluation will be performed and appropriate modifications will be made. The probability for any of these assumptions to be incorrect is very low."

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DATE: September 10, 1999 **REVIEWER:** IDHW/DEQ

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NPTF Draft 90% Remedial Design				
1	2.1	2-2 Last Sentence in Section	The beginning of this sentence is unclear because it appears that the water is considered to no longer contain the listed hazardous waste as a result of the air stripping process. Even if the treatment system is successful in reducing hazardous constituent levels to below MCLs, the water will still contain a listed hazardous waste until a no-longer-contained-in is granted. Please rework this sentence to clarify this statement.	Text changed to the following: " . . . the water will be considered to no longer contain the listed hazardous waste. This is dependent on being able to obtain a NLCID from the State of Idaho. The water will then be discharged as clean water, . . ."
NPTF Draft 90% Remedial Action Plan				
General comment			Concerns have been raised regarding potential additional hazardous VOC and SVOC constituents in the TAN groundwater. The current air stripper design only considers four (4) VOC compounds. Due to actions at the source, surge and stress activities near the source and potential generation of constituents through ISB activities, additional previously unidentified compounds may exist. Identification of additional hazardous compounds in the groundwater could require a significant design change. Therefore, timely collection of groundwater samples for a minimum of VOC and SVOC compounds as listed in 440 CFR, Part 264, Appendix IX may prevent costly re-design or delays in the future. Please include plans for sample collection and analysis for these constituents.	Current monitoring plans include analysis of CLP VOCs with the addition of PCE/TCE degradation products (cis and trans 1.2-DCE, ethene, ethane, methane). This target list has been discussed with the agencies and will be used to evaluate NLCI requests on a cummulative risk basis. A statement regarding this approach will be added to the NPTF Draft 90% RAP. This comment also identifies a concern that a "significant design change" may be required if previously unidentified hazardous compounds appear in a treatment stream. As remediation of the source area proceeds the concern will be addressed. It is recommended that the concern be addressed through review of the SMO CLP analyte list (VOCs, and SVOCs) to identify subclasses of compounds that could reasonably be expected to cause a significant design change. Given this list, appropriate design changes can be identified at a conceptual level. The air stripper influent monitoring strategy includes the above referenced modified CLP VOC list and, in addition, the RAP will be modified to identify the CLP SVOC compound list (See EPA-540/R-94/073 USEPA Contract Laboratory Program SOW for Organic Analysis, Exhibit C) for air stripper influent samples. This strategy will identify possible future design changes, put in place appropriate timely monitoring to determine

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				if and when design changes may be needed, and will minimize significant system design (and associated cost) prior to the demonstrated need for such design changes.